



User's Manual

Software Release 5

CHAPTER 1

Introduction

1.1 WELCOME TO DEXIS®

Welcome to the exciting world of DEXIS! And thank you for your recent investment in the DEXIS Digital X-ray System. We hope you will have an extraordinary experience with our products and services.

Our mission at DEXIS is to develop and support the Digital Radiography community around the world. We seek to build strong partnerships with our doctors and their teams based on long-term, interactive relationships.

Your new DEXIS Digital X-ray System was designed from the outset with you, the clinician, in mind. This is your tool. Learn to use it well and it will become an effective aid in your diagnosis, treatment and treatment planning process.

As with all new clinical tools, it is necessary to invest a certain amount of time for practice in order to become proficient with the DEXIS Digital X-ray System.

We strongly recommend that you register for in-office training with a certified DEXIS instructor and that you and all of your clinical team set aside 4 to 6 hours to learn the system together. This manual is not intended to serve as a substitute for this training. However, as preparation for the training we do encourage you to read the manual thoroughly and practice with it safely and carefully for at least one week prior to your training date.

Please note that this manual assumes that new users possess basic computer skills and an understanding of the Windows® operating system. Absent this experience, we strongly recommend that you obtain these skills through a computer course, video, or textbook. Your DEXIS representative may be able to suggest (although not endorse) one or more of these computer learning resources.

Unless otherwise stated, in this manual “CLICK” refers to a single left mouse-click. Most functions in the DEXIS software require a single left click. Erroneous or impatient double-clicking or right clicking may cause the program to func-

tion improperly. Also, as a general request, please give the program time to start and complete each function before clicking again.

Let's start your journey into the world of DEXIS Digital X-ray!

1.2 WHAT'S NEW IN RELEASE 5

This new release of the DEXIS software is a major update over previous releases. It is far and away the most comprehensive upgrade since the original software was introduced in 1995.

New 32-bit Software

The major improvement in this release is that the software has been completely rewritten line-by-line in 32-bit code.

The principal advantage of 32-bit software is that it should run much faster and more reliably. In addition, there will be a wider range of hardware available to interface with the software, including scanners and video cards.

Consistent with the new 32-bit architecture, the new release of DEXIS will now run in "native" format with the new Microsoft operating systems: Windows® XP® (home or professional) and Windows® 2000®.

This release also retains "backward compatibility" with earlier versions of Windows, including Windows® 98® and 95® Windows® NT®, and non-upgrade versions of Windows® ME®.



New Patient Administration Screen

The DEXIS Patient Administration program has been modified and improved as a result of requests from owners. The main window is now scaleable and a scroll bar has been added. Font size can also be controlled. A few other functional changes were introduced with DEXIS release 3.1 and are incorporated into this release, as well.

New Name: DEXray

The main DEXIS program has been renamed DEXray, consistent with its primary function: taking and displaying digital X-rays. Other changes include subtle

modifications to the layout, including title bar appearance and icons. Following requests from owners, the “corners” and outline of any new on-screen “DEXrays” are now black instead of white (older images retain their original white background, created when the X-ray was first acquired).

New designations

New designations have been introduced to assist in identifying the origin of image sources. These designations include “DEXray by DEXIS” for an original X-ray image taken using a DEXIS sensor and DEXIS capture device. An X-ray taken using non-DEXIS hardware but acquired directly into the DEXray program will carry the designation “Original.” Additional designations that may appear include “Scanned,” “Imported,” “Derived,” and “Enhanced.”

These new designations are intended to provide greater security and reassurance with regard to the origin of images. They will be present whenever an on-screen image is enlarged or printed.

New Perio Mode ClearVu

The ClearVu image enhancement has been further refined to meet the needs of periodontists: crisp bone structures and ligatures are obtained with a mouse click. Furthermore, ClearVu mode now stays on when you switch patients. Also the printed ClearVu has been optimized giving sharper printed images in DEXray as well as in DEXwrite.

New Compare Feature

“Compare” is a new DEXray feature that allows the comparison of two images in order to ascertain their differences.

The four modes: “Side By Side” offers the images side by side and proportional in size; “Color Addition” shows density changes in color; “Subtraction” shows density changes in light/dark values; “Red-Green Stereo” from earlier editions is incorporated into “Compare.” The latter three modes allow for the alignment of the two selected images. Originally designed for the research community, “Compare” is now available to all DEXIS users.

New DEXwrite Features

The chairside report generator DEXwrite has been extended in several respects: A generalized “Receipient” mechanism greatly simplifies sending reports to all kinds of recipients; reusable text blocks and input fields give greater flexibility in report generation.

New DEXsafe Feature

DEXsafe, a feature that allows you to easily backup your data, is now offered. DEXsafe is accessed from the DEXIS Administration screen. It allows you to choose full or incremental backup and to choose a specific drive.

**New Help Features**

The screen now shows the current DEXIS logo as an icon that leads to the Program Information screen. This screen offers two new functions:

- **Help:** allows access to the DEXIS software on-screen manual
- **DEXIS Web Site:** opens the DEXIS web site in the user’s browser.

CHAPTER 2

Installation, Care, and Maintenance

Most telephone calls for assistance received by the DEXIS Customer Care specialists stem from inadequate attention to hardware and software installation. Poor care of the DEXIS sensor or DEXIS capture device can result in damage to or destruction of the fragile electronic components. Also, inattention to basic maintenance procedures, including adjustment of the X-ray source, can lead to unacceptable image quality.

We strongly recommend using the installation services of a factory-trained DEXIS engineer or certified DEXIS installer. We also recommend that you engage a qualified computer specialist or an experienced network technician and develop a permanent relationship for your ongoing computer needs. We understand the prospective of “saving money” by implementing a seemingly more cost-effective solution; however, it is our experience that while this may be true in the short term, such decisions are considerably more expensive in the long run.

Naturally, turnover and attrition in a dental office will see team members come and go. The DEXIS Digital X-ray System is a highly sophisticated piece of equipment that must be handled with care and maintained in accordance with the manufacturer’s recommendations. Despite the pressures of a busy schedule, please take the time to ensure that all new team members become familiar with the equipment and the care that it requires.

After installing and testing your software, hardware and components, we suggest that you take the time to explore the software and read the on-screen manual.

When calling Technical Support for assistance, please make sure that you have access to the computer on which the DEXIS system is used and on which the manual may be displayed. You will be instructed where to find answers and solutions for your particular questions. This makes for optimal “over the phone” assistance.

2.1 OVERVIEW OF THE DEXIS SYSTEM

Upon opening your DEXIS kit you will notice three basic components: the DEXIS sensor with its PC Card (also referred to as “PCMCIA Card,” “Mobile Card” or “Board”), the DEXIS installation software and your full set of sensor holders.

2.2 HARDWARE REQUIREMENTS

Our current hardware system requirements are available in the support section on our website www.DEXray.com, from your representative and from our Customer Care Center. As technology changes, our requirements are updated to reflect such changes. Please consult current DEXIS systems requirements before the purchase of any hardware.

2.2.1 HARDWARE PLATFORM

This version of DEXIS software is for use on common PC platforms of the single-user type, including those with networks, both desktop and laptop varieties. The System Requirements for this software are the same as the minimum requirements stated for the operating system installed therein. Note that systems meeting only the minimum requirements may fail to deliver a satisfactory experience. Systems with faster processors, more memory, and bigger, faster hard drives will significantly enhance performance.

2.2.2 OPERATING SYSTEM PLATFORM

This software has been validated for use on the following members of the Microsoft Windows product family of operating systems:

- Windows 95 OSR2
- Windows 98 Second Edition
- Windows NT4 (see below for restrictions)
- Windows 2000
- Windows XP

Do not deploy this software for use on other versions of Microsoft Windows or on other operating systems that emulate the Windows operating system un-



less the software has been validated for use on that platform by our Technical Department.

Windows NT₄ has only limited support for PC Cards; therefore, you need to install the software library “Cardware for Windows NT” in order to use the DEXIS sensor. “Cardware for Windows NT” is commercially available. Most video capture cards are also not supported under Windows NT.

2.2.3 CAUTION: HARDWARE & SOFTWARE UPGRADES

Every change in hardware or software exposes your business to risk. Computers containing patient records are “mission critical.” Careful consideration is required in order to minimize risk before changes are made to any system that is currently in use. Whether the change is to be made to hardware, to the operating system or to the DEXIS application software, you should be prepared to deal with an unexpected outcome including a catastrophic loss of data. For this reason, we offer the following suggestions for use with mission-critical systems:

Instead of upgrading hardware or operating system, consider purchasing a new pre-configured system. Computers are amazingly inexpensive today; bringing-up a new system in parallel with an existing system is a good way to avoid placing the existing system at risk. The existing system will remain productive while the new system is qualified and readied for full service. Consider the new computer as cheap insurance, but it’s even better than insurance because you get to keep it.

If you must upgrade your existing system, consider purchasing an additional hard drive and making a bootable, literal copy of the existing hard drive. Remove the original hard drive and make the changes to the newer (and probably larger) hard drive. With the original hard drive removed from the computer, it is not at risk and all of your data will be safeguarded. If the new changes are found to be unsatisfactory after a suitable evaluation period, you can always re-install the old hard drive and fully restore your previous environment.

Always back-up your data and store it offsite. Before assuming that your back-up efforts have been successful, make sure that you understand the backup process and practice the restore process at least once on a test system. Verify that both the operating system and data have been preserved.

2.2.4 DIAGNOSTIC IMAGING

It is in displaying images on the screen that your needs dramatically depart from the needs of ordinary computer users. The quality of image presentation will be important in your selection of a monitor and video card. Carefully evaluate your selection prior to purchase by using sample images that are known to be of diagnostic quality. Sample images, including a viewing program, are available from your DEXIS Representative. DEXIS users can make their own evaluation floppy by simply exporting with DEXview.

Here are a few things that we have learned after many years of experience:

- Premium monitors are highly recommended. Your needs are similar to those of a professional image scientist or a commercial photographer, so treat yourself to the best quality.
- Premium CRT-based monitors are still better than premium LCD-based monitors.
- A CRT monitor with an “Invar Mask” will be better than one with a mask of any other material.
- Monitors with tiny tri-color dots are better than monitors with colors in stripes or bars. You can examine the color arrangement with a loupe.
- Analog monitors seem to have better images than so-called digital monitors.
- When selecting a notebook computer, chose models with LCD screens recommended for use with photographic imaging.

2.2.5 SPECIAL HARDWARE REQUIREMENTS

DEXray

The DEXray product requires a PCMCIA interface. These interfaces are also referred to as PC Card Readers. Most notebook computers include PC Card Readers while most desktop computers do not. It is not possible to add an external PC Card Reader to a notebook computer that does not have one built-in. Approved PC Card Readers for desktop computers are available from your DEXIS Representative. These accessories are easy to install and can be retrofitted to desktop computers with one available 3.5” floppy disk drive bay and one avail-

able PCI or ISA card position (specify PCI or ISA). Please refer to the Hardware and Software Installation section prior to installing this accessory.

DEXimage

DEXimage requires an image source and a capture device. The quality of the result cannot be better than the quality of the source. Expensive cameras may offer higher resolution still images at low frame rates, while full-motion video cameras may capture dozens of frames per second, none of them high resolution enough to allow enlargements.

Capture devices may be interfaced directly to boards installed in the back of the computer, or to interfaces like USB. The interface you choose may affect the performance or usability of the result. Ease of use is also important. A product that requires the user to transfer images from camera to computer in order to send images may be less usable than a product that transfers images in a “hands free” fashion.

Always test your camera installation as a “stand-alone” before interfacing to DEXimage.

A foot pedal can be used in DEXimage to start and stop the live video and to capture still pictures. DEXimage can handle foot pedals connected to a serial port and pedals connected to a game port. Some cameras have a capture button that can be used instead of a serial port foot pedal.

DEXscan

DEXscan requires a scanner. To scan ordinary paper images, such as your signature or office logo, a standard scanner may be used. If you intend to scan X-ray images a scanner with a transparency adapter is required. Be sure to select a scanner that is recommended by DEXIS and that has an interface that is appropriate for your installation.

2.3 HARDWARE INSTALLATION

2.3.1 PC CARD READER INSTALLATION

Install the PC Card reader (PCMCIA slot) into your desktop computer following the manufacturer’s instructions, typically the card reader’s software and then

the card reader itself. When you turn your computer on, Windows should recognize the reader and load the appropriate drivers.

If you do not receive the message “New hardware found” call Technical Support for assistance.

DO NOT PLUG THE DEXIS PC CARD IN AT THIS TIME!

2.3.2 DEXIS PROVIDED FOOT PEDAL

Plug the foot pedal cable into the serial port on the back of your desktop or laptop computer (9 pin male connector). See “Foot pedal or Wand Capture” on page 86 for instructions on how to use.

Please note: DEXIS provided foot pedals are for use with DEXimage software only. They will not work with any other camera software.



2.3.3 ADDITIONAL HARDWARE

Please refer to the specific owner’s manuals for information on your computers, printers, scanners, card readers, foot pedals, monitors, and cameras for installation and use. Should you need technical assistance with any of these items, please consult the manufacturer of each specific item.

Again, we strongly recommend employing the services of a factory-trained DEXIS engineer or certified DEXIS installer. We also recommend that you engage a qualified computer specialist or (preferably) a network technician and create a sustainable relationship for your ongoing computer needs.

2.4 SOFTWARE INSTALLATION

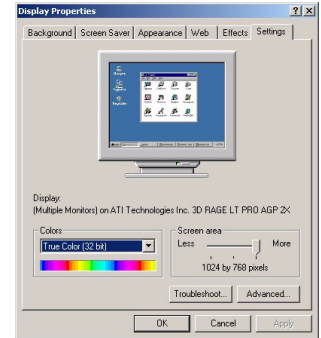
Please follow these instructions to install your new DEXIS Digital X-ray System software. Your DEXIS system must be completely installed and tested before training can begin.

After installation, use the verification and testing instructions in “Installation Verification and Testing” on page 114. Following all the instructions will ensure that your system is fully functional. The system will be taught in the “Simulation” mode for all hardware not functioning at the time of training.

2.4.1 DISPLAY SETTINGS

Before installing your DEXIS software, please change your display settings to best view the DEXIS screens.

1. Go to: “Start”, then “Settings” and click on “Control Panel”; double-click on the “Display” icon to open the Display Properties screen; click on the “Settings” tab at the top.
2. Under Colors: Choose “True Color” (16-bit) for laptop computers and flat-panel monitors. Choose 16-bit or 24-bit for all others.
3. Under “Screen area”: Recommended resolution is 1024 x 768, but the software will also work on all other resolutions. Always choose the native resolution for LCD monitors.
4. Click on “Apply” to apply these settings.



2.4.2 DEXIS INSTALLATION CD

The DEXIS installation software is delivered to you on a CD plus an additional floppy disk entitled “Sensor Disk.” This additional piece of software is used to maximize the resolution of your sensor.

Please note: If you purchased your computer through DEXIS, it will be delivered to you pre-loaded with software and initial information. Please refer to “Installation Verification and Testing” on page 114 to skip the installation steps and go directly to Verification.

2.4.3 INSTALLATION PLANNING

If you plan to run DEXIS on a stand-alone computer, there is not much to plan and you may proceed to the next section.

If you have a local area network, you need to designate a hard disk of one of the computers to hold the DEXIS data (images and patient data). This server disk needs to be shared so that it can be accessed (with read and write access) from all of the computers that will be running DEXIS software and will thus need to access the data. It has to be given a drive letter on all participating computers. We suggest the drive letter “X” (for X-ray), and will use this letter in subsequent examples, although any other drive letter would be fine.

Note: *If these terms are unfamiliar to you, please STOP. DEXIS highly recommends that you contact your network professional before proceeding further.*

For a network installation, the following steps have to be performed **on all computers** on which DEXIS software is to be used. **Start with the server, where the DEXIS data will be stored.**

2.4.4 RUNNING THE INSTALLATION PROGRAM

To begin the installation, insert the DEXIS installation CD into your CD-ROM drive. The CD is equipped with an “Autorun” feature and will start on its own. Should the “Autorun” feature not work with the CD-ROM drive in your computer, you can launch the installation menu manually: Double-click on the “My Computer” icon on your desktop, then open the CD-ROM drive by double-clicking on its icon, then double-click on the “DEXmenu” icon.

Select your language

If your CD offers the choice, choose “**English-US,**” as international versions give international tooth numbers that differ from those used in the US. The Software CD for distribution in the US does not offer this choice and automatically advances to the next step.

Select software

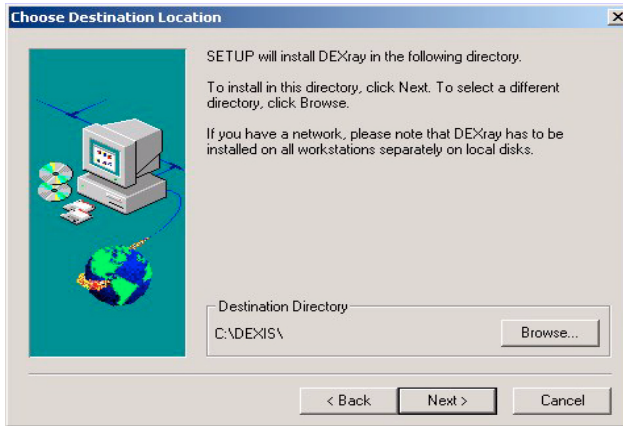
Click on “DEXray” to install the DEXray program.

Choose destination location

During the installation process you will be asked for the folder into which the software should be installed. Typically you should accept the default folder,



which is “C:\DEXIS\.” In any event, this must be a folder on a local hard disk, not on a network drive.



Note: If this is an upgrade from a previous DEXIS version, please make sure to install the latest version into the same folder as the older version. It will write over the existing version and will not disturb your data. **Do not uninstall** the older version unless requested to do so by DEXIS Technical Support.

Select data directory

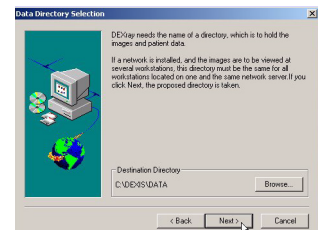
Next, you will be asked where you would like to store DEXIS data. Typically, this will be “C:\DEXIS\Data” for a non-networked computer. In a network, this will be “C:\DEXIS\Data” on the server and “X:\DEXIS\Data” (or “\DEXIS\Data” on any other drive) on the client workstations.

Note: If you installed DEXIS on the server first and mapped the drive properly, the correct shared data folder will be automatically suggested by the installation program.

Follow the on-screen directions until DEXray is successfully installed.

Install additional software

Next, install DEXimage and DEXwrite using the previous method. It is strongly suggested that you load these two modules even if you have not purchased them. You will have a 30-day trial period to use and evaluate them.



Install other software only as it applies to your practice and purchased modules. Please call our telephone support professionals for assistance.

2.4.5 INSTALLING THE SENSOR DISK

The Sensor Disk contains data specific to your particular sensor. It is used by the DEXray software to maximize the image quality.

1. Place the floppy disk labeled “Sensor Disk” into your floppy drive.
2. Go to “Start”, and then “Run”.
3. Type “A:setup” (“A” in this case corresponds to your floppy drive letter) in the window and click “OK”.
4. When the next screen appears, click on “Setup”.
5. Follow the onscreen instructions to complete the installation.



Note: Repeat this process on all workstations where X-rays are to be taken.

Special instructions for offices with multiple sensors

Each sensor is numbered with a unique identifier. This ID number is listed and color-coded in the X-ray capture window once the sensor software is loaded. Install all of the sensor disks on each and every computer and in order. Label each sensor/board assembly with its appropriate number/color. Now, you will be able to use any sensor on any computer by selecting the sensor from the X-ray capture window, see “Taking X-Ray Images” on page 48.

2.4.6 INSTALLING A LINK TO YOUR PRACTICE MANAGEMENT SOFTWARE

To utilize a link to Practice Management software, you must have a networked system. If you have a non-networked system, please skip this section.

Practice Management-provided Link

If you have a link purchased from your practice management company, please consult **their** Technical Support for assistance with installation and verification of the link, and directions for its use.

DEXIS-provided link

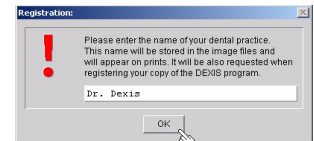
Please **contact our Technical Support for assistance with the installation** and verification of the link. **Do not attempt** to install without assistance as this could cause corruption of your existing patient database.

See “DEXIS to Dentrrix Link” on page 128 and “DEXIS to EagleSoft Link” on page 130 for instructions for the use of DEXIS-provided links.

2.4.7 ADDING INITIAL INFORMATION

Once DEXIS is installed you will find a DEXIS icon on your desktop.

To initiate the DEXIS Administration program, double-click on this icon. A window will appear asking for your Practice Name. Type the name exactly as you want it to appear on printouts. Click “OK” when done.



Next, you will be asked to enter your telephone number. Type it in and click “OK.”

Now, you will be asked to enter a new patient. For setup and test purposes, enter a test patient. Type in a number (such as “1”), a last name (such as “Test”), and a first name (such as “Test”). Click “Done.” You will now have full view of the DEXIS Administration screen, and patient’s name, Test Test, will appear on the screen.

For network systems, this initial information should now be accessible across the network and will not need to be added to each workstation.

If linked to a practice management software:

All patients must be added through your practice management software. However, you may add a test patient directly into DEXIS Administration (see above) to be deleted after testing. Alternatively, you may add a test patient within your Practice Management or choose to use an existing patient’s file with which to practice. See “DEXIS to Dentrax Link” on page 128 and “DEXIS to EagleSoft Link” on page 130 for instructions on the use of DEXIS-provided links.

2.4.8 OBTAIN REGISTRATION CODES

From the DEXIS Administration screen, click on the “wrench” icon and then click on “Component Licensing”. Call DEXIS Technical Support for registration codes for your purchased programs. One of our technical representatives will walk you through the process. Should you wish to make any changes to your practice name or telephone number you will need to re-register your programs.

For network systems, you may obtain registration codes on any one workstation for the entire network.

Your DEXIS installation is now complete. Please go to “Installation Verification and Testing” on page 114 for verification and testing.

2.5 ADJUSTING THE X-RAY SOURCE

The following is a suggested method of setting up your X-ray machine in order to effectively take a digital radiograph. Each X-ray machine may be somewhat



Registration:

Practice: Dr. DEXIS

Phone: 123-456-7890

You may evaluate all DEXIS components for 30 days.

To continue to use the software you need a valid license. Licenses are issued for permanent or temporary use, usually together with maintenance agreements.

You may acquire licenses by telephone or in writing. To issue a registration number we need the information shown here.

DEXIS Customer Care

1000 Northfield Court

Suite 150

Roswell, GA 30076

phone (888) 883-3947

fax (888) 823-3947

e-mail support@dentray.com

Component: DEXnet

Previous Expiration Date: 7/12/2002

New Expiration Date:

Registration Number:

Print Agreement

Print Form

Done

Later

17

different and may require more or less radiation in order to satisfy the doctor's needs.

Clinical experience has shown that it is a safe bet that you can reduce the radiation by approximately 70% as a starting point if you are using D speed film or by 30% if you have already changed to E speed film. With E speed film you have already reduced the radiation significantly and therefore your savings with digital radiography will be less than with D speed film.

Remember that these settings will be different for anteriors (less exposure needed) and posteriors (more exposure needed). You should take several test images and then adjust the settings accordingly.

The radiation of X-ray tubes is controlled by the settings of:

- Voltage (kV or kVp)
- Current (mA)
- Exposure time (msec) or pulses

Some controls allow for the modification of all of the above, some have fixed settings for current and/or voltage. Although many newer X-ray units have a 'Digital' button, pressing it generally results in a flat reduction in radiation and may not be an ideal setting.

Starting from the settings you use for D speed film, you should modify the settings as follows: Keep the mA setting.

If possible, turn the kV or kVp down to 70. Some practices use voltages up to 90 kVp for film X-rays. These high settings give less contrast in digital X-rays. A reduction by 10 cuts the radiation in half. This has to be taken into consideration when adjusting the time.

Adjust the time or pulses so that the resulting radiation is about $\frac{1}{3}$ of the one used for film. Take into account the reduction in voltage, if applicable.

No kVp reduction: reduce time by 60 - 70%

kVp reduction by 10: reduce time by 30%

kVp reduction by 20: leave time at film value

kVp reduction by 30: double the time

Distance of X-ray source to the sensor

There is a correlation between the distance of the cone to the sensor and the resolution of the captured image. The radiation that reaches the sensor decreases with the square of the distance. That means if you double this distance, you receive only $\frac{1}{4}$ of the radiation. Be sure to place the cone as close to the patient's face as possible. If you are using the PositionIt parallel ring, place the ring against the patient's face and the cone against the ring.

Please note: X-ray machines, even the same brands and types purchased at the same time, differ widely in their performance. In addition, on newer X-ray machines, the “digital” setting on your dial or keypad may not be the ideal setting. We suggest that you test each machine in order to calculate the proper setting for that machine.

Selecting an Initial Setting

You need to take a few test X-rays with the calculated setting and critically review the images. Connect the sensor to the computer. Place your sensor into the aluminum testblock and place it on a flat surface with the testblock facing up. Aim your X-ray tube so that the long axis of the tube is perpendicular to the flat surface of the testblock. The X-ray head should be directly over the testblock, not more than $\frac{1}{2}$ inch away from it.

Choose or create a test patient and open this patient's DEXray intra-oral screen. Type “X” on your keyboard to open the Intra-oral X-ray Acquisition screen. Select a tooth from the chart. Yellow, then green bands will appear on the tooth chart. Leave the room and trigger the tube.

The DEXray software shows you the enlarged X-ray of the testblock. It looks rather dull, but since the testblock has a similar radiographic density as an average adult molar, the characteristics of the image will indicate whether the exposure is appropriate for X-raying teeth. Two tools help you in evaluating the test image:

Color indicator: The appearance of color indicators in the form of dots offers exposure information at a glance. If you receive a yellow dot, your level of radiation is too low. If you receive a red dot, your level of radiation is much too low. If the dot is blue, the level of radiation is too high. If the dot is black, the level of radiation is much too high.

Parameters: Each image has a group of numbers associated with its exposure. Check the parameters of the enlarged testblock image on the screen by clicking in the space between the date and the tack or on the color dot, if present. This opens the Image Parameters information box. The second number from the end (disregarding numbers in parentheses) is the one to look at. If that number is under 1500, raise the duration setting (seconds or pulses) and test again. If the parameter is over 2500, lower the duration setting and take another test X-ray. If the number is between 1500-2000, note the exposure setting for taking X-rays on anteriors. If between 2000-2500, note the exposure setting for taking X-rays on posteriors..

Note: Since the afore-mentioned parameter is a measure on how much radiation reaches the sensor, its value depends on the radiation issued by the tube, on the distance between the tube and the sensor, and on the object being X-rayed. The above given numbers are only valid for X-raying the DEXIS testblock. When you X-ray actual teeth, you will usually receive a higher parameter value because part of the X-ray shows "empty" space around and between the teeth that is not absorbing much radiation. As a rule of thumb, the parameter value (second last number disregarding numbers in brackets) is between 2500 and 3000 on well-exposed intraoral X-rays.

Evaluating Images

Use the setting established with the testblock to capture your first images on patients.

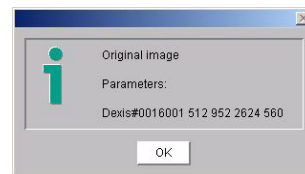
Initially, upon taking images on actual patients, **please take the time to critically evaluate the image quality.** If images appear grainy, increase the radiation by increasing the time. If they seem rather dark, you should reduce radiation. There is a wide range in which DEXIS compensates for under- and over-exposure. If you get good results with a particular setting, you might try less radiation to see whether you still gain good results.

Remember, as with standard film, you will need to adjust the duration setting to compensate for tooth type (central incisor to molar) and body type (larger adult to small child)

The settings you ultimately choose, no matter the setting number or parameter it gives, should be what you consider to be suitable for your diagnostic needs.



Click on the color dot in the upper right corner.



2.6 SAFETY PROCEDURES WITH X-RAYS

The rules of dental radiography still apply to digital X-ray systems. Although there is less radiation with digital X-rays, please continue to use protection for your patients. As a clinician, clear the immediate area when exposing the sensor.

When beginning to take DEXray images, please use the guidelines in “Taking X-Ray Images” on page 48. Only take X-rays on patients once you have adjusted your X-ray exposure and taken test images.

2.7 PROPER CARE OF THE DEXIS HARDWARE

The sensor, cable (or cord) and board comprise the heart of the DEXIS system. Please treat your sensor and board with the care and respect afforded to other very sensitive electronic devices, such as digital cameras or laptop computers. The system is extremely important to your practice and productivity; it replaces your film, processor and darkroom. Please adhere to these important guidelines to keep your DEXIS system running at optimum levels.

2.7.1 SENSOR AND BOARD CARE

- **Never soak the sensor** in any solution. Soaking and using caustic chemicals will weaken the sensor housing and the sensor-cable connection. **Never expose the board to moisture.** Also, **Never autoclave the sensor or board.**
- **Never use hemostats or "clamping" devices on the sensor or cable.** Doing so will cause sensor housing or cable wiring damage.
- **Never twist, tightly coil, or wrap the sensor cable around any objects.** This includes coiling it around the sensor board when not in use. Also, **keep the sensor cable off the floor** where chairs or carts may roll over the cable. In addition, **keep the sensor cable clear of drawers and doors** where it may be crimped upon their closing. Lastly, **never pull or stretch the cable** including when disconnecting the sensor from the board or removing barriers. Exposing the sensor cable to these situations will damage the sensor cable causing the sensor to pre-fire, give an unclear image or render it fatally damaged.
- **Never allow patients to bite the sensor or cable.** This will damage the housing and/or cable and lead to a sensor malfunction. We strongly recommend

the **use the DEXIS holders** as they are designed to protect the sensor; In addition, latex barriers, may give added protection. Should you choose to NOT use a DEXIS holder, you must **protect the cord**.

- **Never insert foreign objects into the board or sensor connection housing.** Doing so will cause a short in the sensor pins and will loosen, and/or damage the connection site.
- **Never drop your sensor or board.** Dropping the sensor, especially on hard surfaces such as floors and countertops, will shock the system causing the internal electronics to malfunction or be fatally damaged.
- **Remove the sensor's board from the computer when re-starting the computer,** whether during the day or overnight. If the computer is started with the board in the in PCMCIA slot, it is subject to power fluctuations that may cause circuitry issues. In addition, always **remove the board from the computer before attaching or detaching the sensor.**
- **Protect the sensor and board.** When the sensor/board are not in use, contain it in a way that will keep it from any conditions that can cause damage.

Please be advised: DEXprotect does not cover abuse or misuse. All visible damage voids your DEXprotect coverage and warranty.

2.7.2 CONNECTING YOUR SENSOR AND BOARD TO THE COMPUTER

The sensor is connected to the PC Card by a metal connector. This is a precise connection. Therefore, please take the time to learn how this component functions. To separate the sensor from the board, pull them straight apart without twisting or turning either part. Once the two are separated, you may cover the sensor's connection end with the attached cap.

To connect your sensor to the board, align the red dots on the two parts. Snap the parts together firmly until you hear a click.

Carefully insert the sensor/board assembly into the PCMCIA slot of your computer. Please use caution, as there may be 2 slots – keep it level and insert into one slot or the other. In most cases, you will hear two beeps. This is the signal that your computer recognizes the board. Additionally, you may hear two beeps each time you remove the board.

Please note: The DEXIS PC Card (or board) is “hot-swappable” meaning that you do not have to notify Windows that you plan to remove it. Nor do you need to restart your computer upon inserting the card. Should you receive a message that you “may lose valuable data” by removing hardware without notifying Windows, please disregard. This does not pertain to the DEXIS card. The only time you should not remove the card is when the “Intra-oral X-Ray Capture” screen is open.

2.8 REGULAR BACKUPS OF IMAGE FILES

It is extremely important to back up your data on a regular basis as a matter of routine maintenance. DEXIS offers DEXsafe, a one step feature to copy all or part of your DEXIS data to a specific backup drive. Please see our hardware requirements for recommendations on devices. Instructions for using DEXsafe are found in “Backing Up Your Image Files” on page 131.



CHAPTER 3

Clinical Use of the DEXIS Sensor Holders

Please become acquainted with your sensor. The DEXIS sensor has a unique design; it has clipped corners and is thicker than film. This design, along with proper placement, translates into patient comfort. The electronics are in the bubble on the back, thereby utilizing nearly the entire surface of the sensor for capture. You receive an image approximately equivalent to #2 size standard film.

If you have not done so, please take some time to review the proper handling guidelines in “Proper Care of the DEXIS Hardware” on page 21 before attempting to use your DEXIS sensor.

3.1 OVERVIEW OF THE POSITION-IT SYSTEM

The holders contained in your Position-It kit consist of:

- 2 posterior biteblocks
- 2 anterior biteblocks
- 2 periapical rings and bars
- 2 vertical bitewing biteblocks
- 2 horizontal bitewing biteblocks
- 1 bitewing bar and ring
- 2 vertical endo holders
- 2 horizontal endo holders
- 2 cable clips

The bars, biteblocks and rings are similar to the RINN or XCP system and function in the same manner. The bitewing holders may be used with or without the bars and rings, or you may use bitewing tabs (along with cord protection). The periapical holders may be used alone or with the rings and bars. When the pe-

riapical holders are used without the rings, they function as “stab” device. The hand-held endo holders may be used with or without the bitewing ring and bar.

The sensor will only fit into the holder one way. Assemble the rings, bars and holders so that the entire sensor area is visible through the ring. This applies to horizontal or vertical bitewing holders, periapical (anterior or posterior) holders, and endo holders.

Place the cord into the groove on the holder. This protects it when the patient closes. Should you choose to use the cable clip, place the square hole on the end of the bar and place the sensor cable into the clip.

3.2 CORRECT PLACEMENT USING THE PARALLELING TECHNIQUE

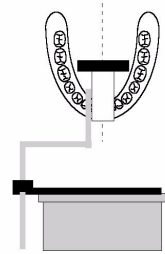
We recommend the use of the DEXIS Sensor Holders contained in the “Position-It System” included with your new DEXIS Digital X-ray System. Correct placement of the DEXIS sensor in the patient’s mouth is essential for obtaining acceptable X-ray image quality. These holders have been specially designed to work with the DEXIS Sensor and the DEXray software.

Please note: Holders shipped after January 1, 2003 are autoclavable, provided you use care and avoid direct contact with metal heating elements. These elements get very hot and direct contact will reduce the lifetime of your holders. Holders shipped prior to this date may be autoclaved but are more sensitive to overheating. Avoid direct contact with heating elements and do not expose to temperatures above 257° F/125° C.

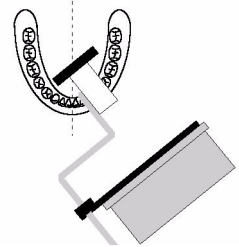
The DEXIS sensor in combination with the supplied rings and holders (Position-It Kit) use the paralleling technique originally developed by the Rinn™ Corporation. This technique places the sensor in the mouth so that it is parallel to the long axis of the tooth and perpendicular to the interproximal spaces. By drawing an imaginary line through the occlusal/incisal surfaces (occlusal line) of the teeth to be X-rayed, and placing the sensor parallel to this line, it will be perpendicular to the interproximal spaces. To achieve parallel positioning, the sensor/holder must be positioned away from the lingual/palatal surface and located in the deeper areas of the mouth in all areas except for mandibular molars.

Mandibular Incisor

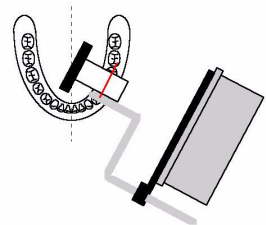
Position the sensor/holder so that it is parallel to the roots of the mandibular incisors. Place either under the tongue or over the tongue, whichever is most comfortable for the patient. If large mandibular tori are present, position the sensor/holder behind the tori, even if it is in the first molar area. Ask the patient to close end-to-end in order to maintain the placement. In the event that the holder does not remain parallel to the roots of the incisors, bisect your angle. Should the incisal edges routinely be missing from your images, place a cotton roll or flap between the tooth and the holder and/or verify that the sensor holder is parallel to the roots.

**Mandibular Canine or Cuspid**

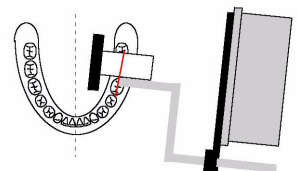
Position the sensor/holder so that it is parallel to the roots of the mandibular canine. Place either under or over the tongue, whichever is most comfortable for the patient. If large mandibular tori are present, position the sensor/holder posterior to the tori, even if it is in the first molar area. Ask the patient to close end-to-end in order to maintain the placement. In the event that the holder does not remain parallel to the roots of the canine, bisect your angle. Should the incisal edges be routinely missing from your images, place a cotton roll or flap between the tooth and the holder and/or verify that the sensor holder is parallel to the roots

**Mandibular Premolar or Bicuspid**

Position the sensor/holder so that it is parallel to the roots of the mandibular premolars. Place either under or over the tongue, whichever is most comfortable for the patient. Once you establish that the sensor/holder is parallel to the roots and parallel to the occlusal line, move the sensor/holder to the midline. Ask the patient to close. In the event that the holder does not remain parallel to the roots of the premolars, bisect your angle.

**Mandibular Molar**

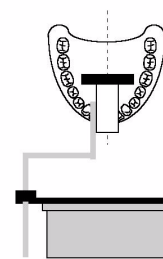
Position the sensor/holder so that it is parallel to the roots of the mandibular molars. Place between the tongue and the teeth. Once you establish that the sensor/holder is parallel to the roots and parallel to the occlusal line, ask the patient to close. This is the only position that does not require placement in the



midline for comfort. In the event that the holder does not remain parallel to the roots of the premolars, bisect your angle.

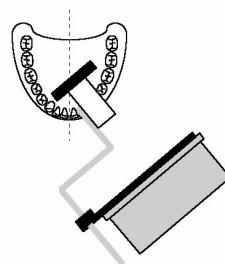
Maxillary Incisor

Position the sensor/holder so that it is parallel to the roots of the maxillary incisors. Once you establish that the sensor/holder is parallel to the roots, move the sensor/holder toward the center of the palate. Ask the patient to close end-to-end in order to maintain the placement. In the event that the holder does not remain parallel to the roots, bisect your angle. If a large maxillary torus is present and you are unable to place the sensor/holder in a traditional position, the sensor/holder must be placed on the torus as you would place traditional film and you must bisect your angle. Should the incisal edges be routinely missing from your images, place a cotton roll or flap between the tooth and the holder and/or verify that the sensor holder is parallel to the roots.



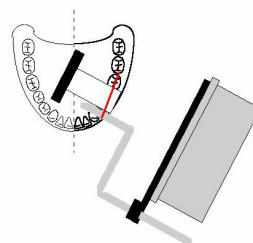
Maxillary Canine or Cuspid

Position the sensor/holder so that it is parallel to the roots of the maxillary canine. Once you establish that the sensor/holder is parallel to the roots, move the sensor/holder toward the center of the palate. Ask the patient to close end-to-end in order to maintain the placement. In the event that the holder does not remain parallel to the roots, bisect your angle. If a large maxillary torus is present and you are unable to place the sensor/holder in a traditional position, the sensor/holder must be placed on the torus as you would place traditional film and you must bisect your angle. If the incisal edges are routinely missing from your images, place a cotton roll or flap between the tooth and the holder and/or verify that the sensor holder is parallel to the roots.



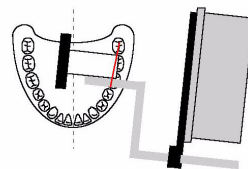
Maxillary Premolar or Bicuspid

Position the sensor/holder so that it is parallel to the roots of the maxillary premolars. Once you establish that the sensor/holder is parallel to the roots and parallel to the occlusal line, move the sensor/holder toward the center of the palate. Ask the patient close. In the event that the holder does not remain parallel to the roots, bisect your angle. If a large maxillary torus is present and you are unable to place the sensor/holder in a traditional position, the sensor/holder must be placed on the torus as you would place traditional film and you must bisect your angle.

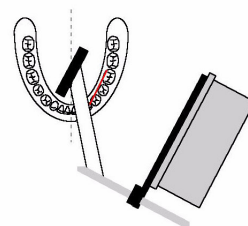


Maxillary Molar

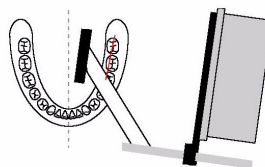
Position the sensor/holder so that it is parallel to the roots of the maxillary molars. Once you establish that the sensor/holder is parallel to the roots and parallel to the occlusal line, move the sensor/holder toward the center of the palate. Ask the patient to close. In the event that the holder does not remain parallel to the roots, bisect your angle. If a large maxillary torus is present and you are unable to place the sensor/holder in a traditional position, the sensor/holder must be placed on the torus as you would place traditional film and you must bisect your angle.

**Bitewing - Premolar or Bicuspid**

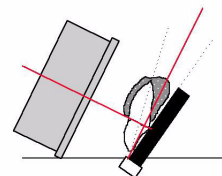
Position the sensor/holder so that it is parallel to the occlusal line, move the sensor/holder toward the midline. Ask the patient to close.

**Bitewing - Molar**

Position the sensor/holder so that it is parallel to the occlusal line, move the sensor/holder toward the midline. Ask the patient to close.

**Endo Holders**

You may use the bitewing bar and ring with the endo holder to use the paralleling technique. Position the sensor/holder so that it is parallel to the root of the tooth and toward the midline. Ask the patient to grasp the handle after you have placed the sensor in the appropriate position. The patient may close to stabilize if position permits. The patient will not be able to close completely due to the design of the holder. Should you choose not to use the paralleling technique, bisect your angle.



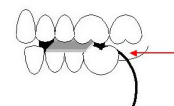
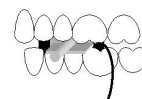
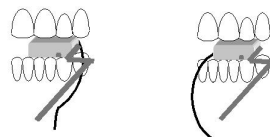
3.3 CORD PROTECTION

There is a groove on the underside of the periapical biteblocks and a slightly different groove in the bitewing biteblocks. Place the sensor cord into this groove for protection. This works well when the sensor is placed into the holder and then the entire assembly is sleeved.

On those occasions where it is necessary to sleeve the sensor before placing in the holder, due to the thickness of the barrier, the cord may not stay in the groove. In this case, verify that the cord is adjacent to the holder, either to the side that is to the anterior or posterior of the biteblock. Since the biteblock will not allow for full closure, the cord is protected. Again, please verify that the cord is not between the biteblock and the teeth as it may become crimped upon the patient closing.

We strongly recommend the use of the DEXIS holders as they are designed to protect the sensor and cord. However, should you choose not to use the DEXIS holders, you must take steps to protect the sensor and the cord. The use of latex barriers and sponge bw tabs may offer additional protection. However, no matter the barrier or bw tab, you must protect the cord

You must always ask patients to close "lightly" so that they have only the slightest of contact. Do not allow patients to depress the cord. If you feel that you will not have the patient's full cooperation, place an object such as a folded gauze or cotton roll on the tab, to hold the teeth open just enough to keep the cord from harm. You may also place the cord in an area where there are missing teeth or in an area where, anatomically, there is an open space or lack full occlusion.



3.4 BARRIERS AND PROTECTION

There are many types of barriers that you can use with your sensor, and other hardware. Sensors must be covered with some type of barrier that covers the sensor and at least 3"– 4" of the cable. Barriers made of latex, urethane or plastic (such as a handpiece sleeve) are widely available. Keyboards may be covered with pre-formed plastic covers or plastic wrap. Use a baggie or a low-tack light handle sheet to cover the mouse. Low-tack light handle covers also work well for barriers for laptop touch pads. Use sterile barriers for surgical settings.

Cleaning and Decontamination of the Sensor and Holders

To comply with ADA and CDC guidelines on decontamination, you must follow these steps:

First, sleeve your sensor with an appropriate barrier, place into the holder and change the holders as needed. When you complete your images, remove and discard the barrier. Use a hard-surface disinfectant spray or pop-up wipe on the sensor and cord. Always use a solution that does NOT contain bleach, glutaraldehyde, alcohol, or other strong chemical components. Your sensor may be washed with warm water and soap, if necessary.

Sterilize/Decontaminate your holders. Please note: The current DEXIS sensor holders are autoclavable, however, certain restrictions apply:

- Always avoid direct contact of the holders with metal trays, instruments, and heating elements.
- Always place holders in autoclave bags
- Always situate bagged holders into the autoclave so that they are furthest from the heat source.

Exposing the holders to hot metal and placing them close to heating elements will reduce the lifetime of the holders.

Older versions of the holders are more sensitive to overheating. Decontaminate these holders using a cold sterile solution. Please consult the manufacturer's recommendations for the solution you are using.

Should you use only one holder for a patient's procedure, you may cover the entire assembly with a barrier. However, decontamination is as previously described: Use hard surface disinfectant on the sensor and decontaminate/sterilize your holders.

Please decontaminate you new sensor and holders prior to use.

Please note: Should you have any questions regarding the decontamination of your sensor and holders, contact our Customer Care Center.

CHAPTER 4

The DEXIS Administration Program

The DEXIS Administration Program is the starting point for all “stand-alone” versions of the DEXIS Digital X-ray System. All of the other DEXIS programs (including DEXray, DEXimage, and DEXwrite) are accessed through this program after first selecting a patient or creating a new patient.

In addition, this program is the starting point for setting up various global “preferences” or default settings with regard to your office and clinical team members (“Providers”). Other preferences control the look and feel of the DEXIS program and automate certain frequently used functions.

DEXIS owners who choose to set up their DEXIS programs to interface directly with their practice management software programs will use the DEXIS Administration Program much less frequently (primarily to set global preferences) as they will select their patients from the equivalent screen in the Practice Management Software.



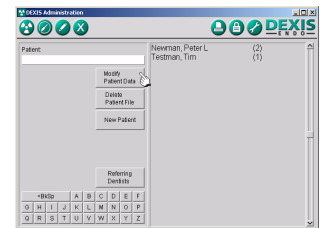
4.1 DEXIS ADMINISTRATION SCREEN OVERVIEW

To open the DEXIS Administration screen, double-click on the DEXIS icon on your desktop.

You may apply certain Windows functions to this screen. You may size the screen using click-and-drag. You may also use the three buttons in the upper right to minimize the screen (thus sending it to the task bar — click the tab to bring it back up), maximize or restore a screen, or close a screen.

There are icons across the top of the screen for various functions. When entered, a list of patients will appear on the right side of the DEXIS Administration screen. A patient search field, alphabet keys, buttons to access patient information, and Referring Dentists are on the left side of the screen. If entered, patient pictures are visible in this area.

Place your cursor over any of the icons and buttons and a help bubble, called a Tooltip, will appear with information about the function. Often, there is also



a keystroke that will execute the function. The Tooltip help feature is available throughout the DEXIS system.

There are four program icons that appear on the upper left area of the DEXIS Administration screen: The first leads to the DEXray X-ray screen, the second to the DEXimage screen, the third leads to DEXwrite, and the fourth closes DEXIS Administration. (You will only see those icons for which you have installed the programs.)

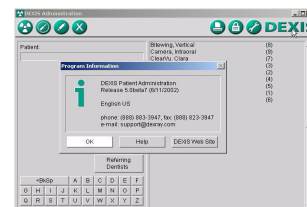
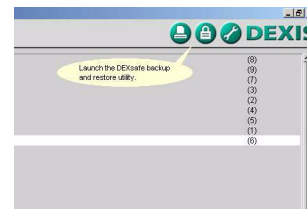
Click on the DEXIS logo icon on the far right to open the Program Information screen. This screen offers program information and will allow you to access the Context Sensitive Help feature and the DEXIS Web Site.

The Help feature:

Click on the Help button and your cursor gains a “?” symbol. Now, click on a feature or icon and the DEXIS on-screen manual will open in an Acrobat Reader screen to the page where the use of the function is described. You may zoom in on the screen shots to see more detail.

Click on “DEXIS Web Site” to open the site in your browser if you are online.

Click “OK” to close the Program Information screen.



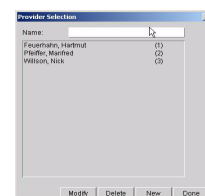
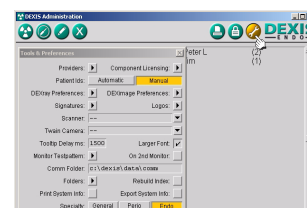
4.2 ENTERING PRACTICE DETAILS

The “wrench” icon opens Tools and Preferences where a variety of information is offered and/or changed:

Providers

Click the Providers arrow to open the Provider Selection screen and view the list of providers for the practice. A search field is located at the top of the screen. To use the search function, type the first few letters of the provider’s name until the name appears.

To add a new provider, click New to open a blank Provider Data screen. Type the last name; DEXIS will capitalize the first letter. Use the tab or arrow key to go to the next line and add a first name. Again, DEXIS will capitalize the first letter. Add any other information as desired, including the provider’s practice management number or letters under Ref.#/Initials. Individual provider logos for use with DEXwrite can be captured with a scanner using the Acquire Logo



button. See “DEXscan: Scanned Images” on page 91 for scanning instructions. Delete the current logo for this provider by clicking the Delete Logo button.

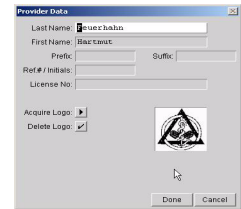
Click “Done” to save or “Cancel” to cancel.

To modify information for an existing provider, search for the name, click on the name to highlight the line, and then click Modify to open the Provider Data screen for that particular provider. Alternatively, you may double-click on the name to open this screen. Tab or arrow down to make changes.

To delete a provider, click on the name to highlight the line, then click “Delete.” The provider will no longer show on the list; however, patients attached to this provider will still show the providers name on their Patient Data screens until another one is selected.

Component Licensing

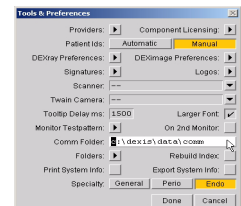
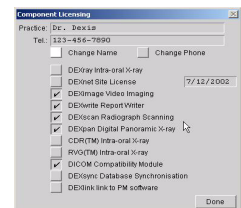
Click on the Component Licensing button to open the Component Licensing screen: This area shows your practice name and phone number and is the information with which you license the use of DEXIS. You must obtain a registration code for each of your purchased modules. To obtain a code, go to this screen and call tech support. Should you decide to change your practice name or phone number, you will need to re-register within 30 days.



Patient IDs

Should you wish to give your patients specific numbers, choose Manual. DEXIS will automatically assign a unique number to each patient if you choose Automatic. If you use a practice management software we recommend using manual numbering and entering the ids issued by that software. If your practice management program is linked to DEXIS, Manual must be selected.

DEXIS defaults to Manual upon installation.



4.3 SETTING GLOBAL PREFERENCES

DEXray and DEXimage Preferences

Each screen has its own preferences and defaults. You may access the programs' preferences here or from their actual screens. Please see “Setting

DEXray Preferences” on page 43 and “Setting DEXimage Preferences” on page 79.

Signatures and Logos

These items are used to scan signatures and the practice logo for use with DEXwrite. You may also access these functions from DEXwrite Preferences; see “Setting DEXwrite Preferences” on page 98. See also “Scanning a Signature or Logo” on page 95.

Scanner

Once your scanner software is loaded, choose it from the list by clicking on the arrow button. You may also choose your scanner software in DEXray or DEXwrite Preferences.

Twain Camera

Click on the arrow button to choose the hardware to be used. These choices are covered in detail in “Taking Digital Photographs” on page 82.

Tooltip delay ms

The number in the box is the delay in time (number of milliseconds) before the Tooltip bubble appears. Choose between 0 and 9999. By choosing 0, Tooltip will not appear.

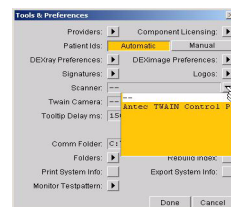
Larger Font

Select the Larger Font box to increase the size of the font on the patient list. This change takes effect after first closing and then reopening DEXIS. Upon installation, the font defaults to the larger size.

Monitor Testpattern

Monitors are a crucial system component, see “Diagnostic Imaging” on page 9. By clicking this button you display a testpattern that helps you evaluate the suitability of your monitor:

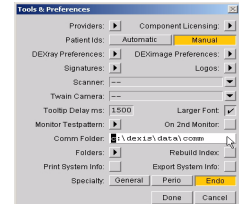
- In the squares labeled 0/5% and 95/100%, you should be able to see smaller squares with slightly different brightness inside the larger squares.



- You should clearly see gray lines in the squares adjacent to those with black and white lines.
- If you move the pattern into the corners of your screen, the lines should stay parallel should be clearly visible.

On 2nd Monitor

This button is for two monitor setups that allow you to move windows between the two monitors (needs a special display adapter). If the button is checked, the DEXray and DEXimage screens will be shown on the second monitor, and the DEXIS Administration screen can be moved to either monitor. The DEXIS Administration will remember its position and will show up on the monitor where it has been left.



Comm Folder

This is the default folder for importing and exporting images. The DEXIS Setup sets it to the subfolder Comm of your data folder. You may want to change it if you frequently exchange images with another program that expects them in a different location.

Folders

Click on the arrow button to have DEXIS search for possible DEXIS database folders and to select from the list.

Rebuild Index

If you experience a loss of database information, DEXIS tech support will use this feature to help you rebuild the database. Please do not use this feature without assistance.

Print/Export System Info

Should you have technical issues, DEXIS tech support may ask you send information about your computer and the DEXIS installation.

These two buttons issue this information. - It is either printed or written to a text file on your desktop. The file can be viewed, printed, or sent by e-mail.

Specialty

Selecting one of the specialties will initialize preference settings as mostly used by dentists of the selected specialty. Of course, you may change the individual settings one by one according to your needs, see also “Setting DEXray Preferences” on page 43.

- **General:** Set ClearVu Mode to “General” and Startup View to “Mouth”.
- **Perio:** Set ClearVu Mode to “Perio” and Startup View to “Mouth”.
- **Endo:** Set ClearVu Mode to “General” and Startup View to “History”.

4.4 ENTERING PATIENT DATA

The patient list is shown on the main DEXIS Administration screen. You may use the scroll bar to the right to search for a patient. The search field for patients is located in the top left side of the main screen. Type the first few letters on the patient’s name until the name is visible. Instead of typing, you may click on the letter buttons. To select a patient, click on the name; the line then becomes highlighted.

To add a new patient, click the “New Patient” button to open a blank Patient Data screen. Type a number, if applicable. Tab or arrow down to the next line. Type the last name; DEXIS will capitalize the first letter. Tab or arrow to the next line and add a first name. Again, DEXIS will capitalize the first letter. Add any other information as desired. The Date of Birth may be entered in different formats: with slashes (M/D/YYYY), with dashes (D-M-YYYY), or 6-digit no dashes, spaces or slashes (MMDDYY).

Choose a provider by clicking on the arrow button next to Provider. This will bring up the Provider Selection screen. Click on the name to highlight the desired provider, and then click Select.

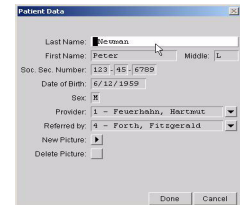
Choose a referring doctor by clicking on the arrow button next to Referrer. This will bring up the Referrer Selection screen. Click on the name to highlight the desired name and then click Select.

Use New Picture to insert a patient’s picture via scanner or digital camera. This is covered in detail in “Scanning a Picture for Patient Data” on page 95 and “Taking Digital Photographs” on page 82. Delete the current picture for this pa-

tient by clicking the Delete Picture arrow button. Click “Done” to save or “Cancel” to cancel.

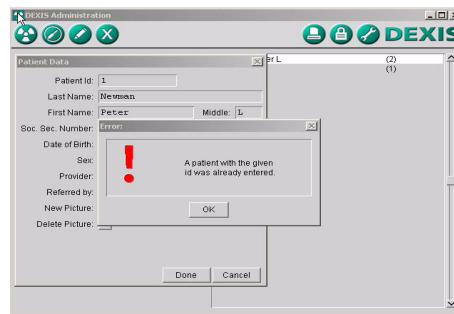
To modify information for an existing patient, search for the name and then click on the name to highlight the line. Click “Modify” to open the Patient Data screen for that particular patient. Tab or arrow down to make changes.

Modification of the patient number is a special case: you may freely change the number to one that is not yet given to another patient. You may change the patient number to a number already in use only if the names of both patients are the same.

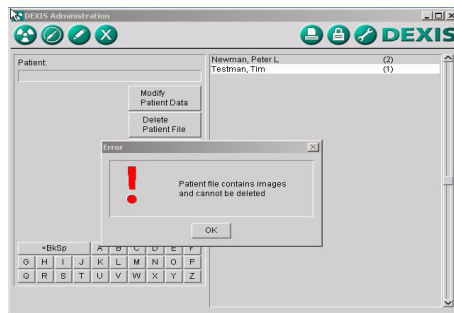


The 'Patient Data' dialog box contains the following fields and controls:

- Last Name: Newman
- First Name: Peter
- Middle: L
- Soc. Sec. Number: 123 45 6789
- Date of Birth: 6/12/1959
- Sex: M
- Provider: 1 - Feuerhahn, Hartmut
- Referred by: 9 - Forth, Fitzgerald
- New Picture: (arrow button)
- Delete Picture: (arrow button)
- Buttons: Done, Cancel



To delete a patient file, click on the name to highlight the line and then click “Delete.” As a security feature, all images must be deleted before the patient file can be deleted.



Once a patient is added or selected (the line will be highlighted), click the appropriate icon to proceed to his or her DEXray, DEXimage or DEXwrite screen. Alternatively, you may double-click on the patient’s name to open a screen.

However, since DEXIS remembers the last screen opened (DEXray, DEXimage or DEXwrite) for the last patient, this is the screen that will open for your newly chosen patient.

Please note: If you are using a DEXIS/practice management link, enter all new patients through your practice management software and **NOT** on the DEXIS Administration screen. See “Interfaces, Bridges, and Links” on page 127 for more information.

4.5 ADMINISTRATIVE TOOLS

Referring Dentists

Referring dentists need to be entered and matched to patients if DEXwrite is used to write letters to them. Click on the Referring Dentist button to see the list of referring dentists. This opens the Referrer Selection screen. A search field is located at the top of the screen. To use the search function, type the first few letters on the referrer’s name until the name is visible.

To add a new referring doctor (or a doctor or company to whom you refer or correspond), click New to open a blank Referrer Data screen. Type the last name; DEXIS will capitalize the first letter. Tab or arrow to the next line and add a first name. Again, DEXIS will capitalize the first letter. Add any other information as desired.

Click “Done” to save or “Cancel” to cancel.

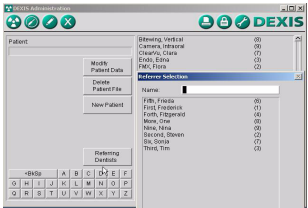
To modify information for an existing Referring Dentist, search for the name, click on the name to highlight the line. Click “Modify” to open the Referrer Data screen for this particular individual. Alternatively, you may double-click on the name to open this screen. Tab or arrow down to make changes.

Again, click “Done” to save or “Cancel” to cancel.

To delete a Referring Dentist, click on the name to highlight the line, then click “Delete.” The referrer will no longer show on the list, however, patients attached to this referrer will still show the name on their Patient Data screens until another one is selected.

Print Reports

The Print Icon allows you to print and export reports containing various data:



Form fields for Referrer Data:

LastName: Fitch
First Name: Frieda
Prefix: _____ Suffix: _____
Ref # / Initials: _____
Office Name: _____
Street: 5th Street
Suite: _____
City: Fort Lauderdale
State: FL Zip Code: 33333
Country: _____
Telephone: (567) 543-1234 Fax: _____
E-mail: _____
Greeting: Mr. Fitch

Print Patient List

This feature prints a list of patients in alphabetical order with patient number, date of birth, gender, and provider number.

Print Provider List

This feature prints a list of providers showing the provider name, DEXIS number and practice management number.

Print Ref. Dentists

This feature prints a list of referring dentists showing each doctor's name, address, phone number and DEXIS number.

Print Activity Report

This feature prints a list of patients and images taken for them over a selected time period. This list also shows deletions plus initials used for each deletion. Additionally, it shows the source of each image (i.e., imported, scanned, etc.)

Export Activity Report

You may also choose to export activity information to a file. This file has one line per activity. The lines contain fields separated by tabulator characters. The format is suited for import into other software such as spreadsheet programs.

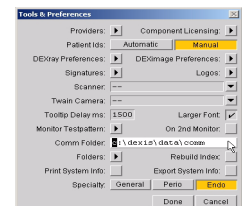
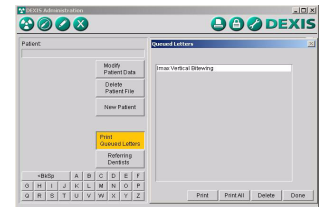
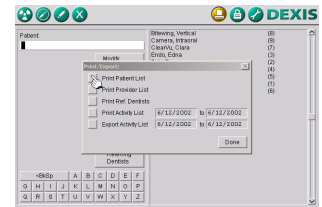
Print Queued Letters

When you chose to put a DEXwrite letter into the queue for later printing (see “Queue” on page 102), this button will appear on the DEXIS Administration screen. The function shows a list of all letters in the queue and enables you to print all letters, to print just selected letters, or to delete letters from the queue.

Import from Communication Folder

If the communication folder (set in Tools & Preferences, see “Comm Folder” on page 35) contains images, an Import icon will appear in the tool bar. If you click on that icon, a list with information about each image in the communication folder will be shown: file name, date, patient name, tooth number.

If you double-click on an image entry, the respective patient file will be selected. If the patient file does not yet exist, the New Patient screen will appear with



all known information already entered. When you now open the DEXray or DEX-image screen for this patient, the Import dialog will show up automatically.

This mechanism allows for the easy transfer of images between locations if the sending dentist A and the receiving dentist B both have a DEXIS system:

- 1. Dentist A sends X-rays of patient P by e-mail or on a floppy disk to dentist B.*
- 2. Dentist B opens the X-rays with DEXview and selects "Export to DEXIS." This will put the X-ray into the communication folder of his DEXIS installation.*
- 3. Dentist B selects patient P either manually by clicking on the Import button in DEXIS Administration.*
- 4. Dentist B opens the DEXray screen for patient P; the Import dialog shows up automatically and allows him to import the X-ray.*

The mechanism also allows for convenient transfer of images between two DEXIS databases on the same network. In this case, the Communication Folder entries of both installations should point to the same folder. X-rays can then be exported from one database, and semi-automatically imported to the same patient in the other database.

4.6 INTERFACING WITH PRACTICE MANAGEMENT SYSTEMS

Links are available between DEXIS and most Practice Management Programs (PMP) on the market that contain chairside modules. These links are in most cases provided by the PMP company based on information from and in cooperation with DEXIS. For some PMPs, DEXIS has programmed links based on information from the PMP company. Please ask your DEXIS representative what is applicable in your case.

If your PMP does not yet interface with DEXIS, we will be happy to provide the necessary information. It is usually a minor task to implement the link.

If you have a PMP in your office but plan to implement the link only later, you should use Manual Numbering in the DEXIS Administration and use the chart numbers of your PMP as DEXIS patient IDs. This makes a link easier to implement later on.

CHAPTER 5

DEXray™: X-Ray Images



The DEXray program is the main software application for acquiring, storing, displaying and sharing Digital X-ray images. It is accessed via the DEXIS Administration program directly from all the major Practice Management Software programs or from any of the other main DEXIS programs.

DEXray is a sophisticated piece of software that has been carefully designed and developed to be simple and quick to learn and intuitively easy to use. It is possible to shoot your first X-ray within minutes of initial setup. All unnecessary keystrokes have been eliminated to ensure that attention is focused on the patient, not on the computer, while an X-ray image is being taken. Information about the patient, provider, tooth number, date and exposure settings are automatically captured at the click of the radiation button.

Despite its ease of use, DEXray is enormously powerful in its capabilities. Icons and function buttons enable the user to move, size, enhance, measure, save, and compare images with just a click and/or drag of the mouse.

There are many shortcuts and timesaving tools in DEXray, more than appear in this manual. Typically, there are 2–3 methods for achieving any desired outcome. For users who invest enough time in learning or discovering the shortcuts, tricks, and tools, DEXray will become an invaluable and highly productive addition to the dental practice.

5.1 DEXRAY SCREEN OVERVIEW

To open the DEXray screen, select a patient on the DEXIS Administration screen and click on the DEXray icon. If you use a link to a practice management program, the method for opening the DEXray screen depends on the program in use.

You may apply certain Windows functions to this screen. You may size the screen using click-and-drag. You may also use the three buttons in the upper right to minimize the screen (thus sending it to the task bar – click the tab to

bring it back up), maximize or restore a screen, or close a screen. For more information on screen sizing and multiple screens, see “Screen and Window Adjustments” on page 125.

The patient information is shown in the header bar; function icons are located across the top of the main window. Place your cursor on any of the icons and buttons and a help bubble, called a Tooltip, will appear with information about the function. Often, there is also a keystroke that will execute the function. The Tooltip help feature is available throughout the DEXIS system.



The screen is divided into four quadrants. The midline's teeth numbers appear in the center of the screen distinguishing the location of each quadrant.

The DEXIS Logo icon gives access to program information, DEXray Preferences, Help, and DEXIS Web Site, see “DEXIS Logo icon” on page 68.

5.2 TAKING YOUR FIRST DIGITAL X-RAY

Click on your test patient in DEXIS Administration and click on the DEXray icon: the intra-oral screen of the DEXray program will open. You are now ready to take your first digital X-ray image!

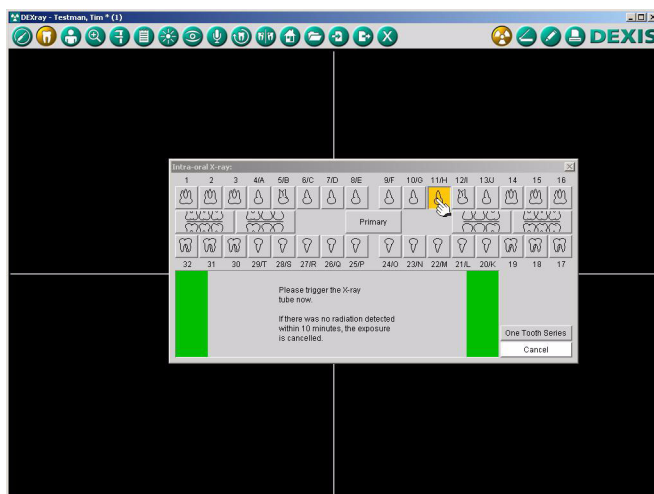
IMPORTANT: If you have not done so, please take the time to review “Safety Procedures with X-Rays” on page 21 and “Proper Care of the DEXIS Hardware” on page 21 before you attempt to use the sensor!

Attach the sensor to the DEXIS card and insert the card into the PC Card slot. If this is the first time the card is being inserted in this computer, Windows will recognize the new hardware and install the drivers. Please wait until this process finishes.

Please do not take your first X-ray on a person!

Instead, put the sensor on a counter or table, flat side up; put a metal object on top of it – a ring, coin, key or your favorite dental instrument; aim the X-ray tube over the object, pointing down and about an inch away.

Type “X” on your keyboard to open the Intra-oral X-ray Acquisition screen — it looks like a tooth chart!



Select a tooth from the chart. Yellow, then green bands will appear on the tooth chart.

Leave the room, lower the setting by 50%, and trigger the tube.

Your first digital X-ray will appear on the screen after a few seconds!

5.3 SETTING DEXRAY PREFERENCES

You may access the DEXray preferences in two ways:

From DEXIS Administration, click on the “wrench” icon to open Tools and Preferences; select DEXray Preferences

From a patient’s DEXray screen, click on the DEXIS logo to open the Program Information screen; select Preferences.

Sensor

Select “No Sensor” for workstations where X-rays will NOT be taken, “DEXIS” for workstations where X-rays are taken, and “Simulation” to have DEXIS simulate taking intra-oral X-ray images. Other choices may be available for additionally purchased modules.

X-Ray Series

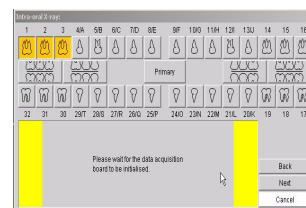
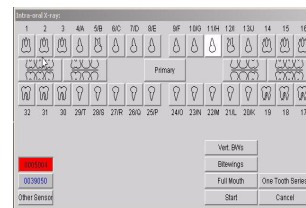
When taking a series of X-rays, DEXIS automatically advances from one position to the next once radiation is detected. This method lets you take a series without having to touch the computer in between.

You can use the sequences already in the system or set up your own sequence, up to four in total per computer. To see the three sequences already placed into DEXIS, click on X-ray Series. Please note: For a Full Mouth series, DEXIS uses a sequence that affords the fewest changes of the holders when utilizing the Position-It kit.

You may edit or overwrite the existing series. However, each group of tooth numbers, such as seen under Full Mouth “1-3 3-5...”, refers to a certain position on the screen. Click on the boxes showing the tooth numbers for each existing series. Use the arrow keys to move through this box and take note of these groups of numbers. It is strongly suggested that you use the same groups of tooth numbers to set up your own series sequence to keep your images from overlapping on the screen.

To set up your own series, click in a box under Name and give your series a name. Next, under Teeth, type a beginning tooth number for each image in your series, then a hyphen, then the ending tooth number, then a space, and so on. The space lets DEXIS know that you are moving to the next image of your series.

Choose “Done” to save or “Cancel” to cancel.



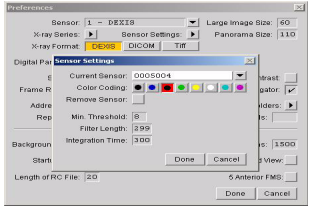
Sensor Settings

You may assign a certain color to a specific sensor by first choosing the sensor's number from the drop down box under Current Sensor, and then clicking on the desired color in Color Coding. This is helpful if you have multiple sensors in your office: Mark the sensors with different colors and enter the colors here. The sensor selection buttons on the Intra-oral X-ray Capture screen will then show the same colors.

You may remove a sensor from the list by choosing the number in Current Sensor and clicking Remove Sensor.

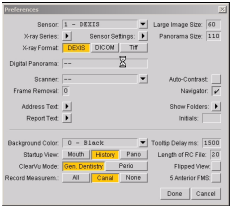
Please call DEXIS tech support before changing numbers in Min. Threshold, Filter Length and Integration Time.

Click Done to save changes and Cancel to cancel.



Format

DEXIS stores the images in one of three image file formats: the proprietary DEXIS format, a compressed format; uncompressed TIFF, helpful if your Practice Management software is to directly access the images; DICOM, a universal digital format for medical and dental imaging being standard in hospital environments. The default and recommended format is DEXIS. When exporting images you may still ask for a different format; the DEXIS software will convert the images for you.



Digital Panorama

Shows the brand of connected digital panorama equipment; otherwise blank.

Scanner

Shows blank if no scanner is selected; your scanner software if a scanner is connected. By clicking the down arrow you can select which of the installed scanner drivers to use.

Frame Removal

This feature controls how scanned X-rays are to be handled: set to 0 for normal flat bed scanners to enable automatic cropping of intra-oral X-rays; set to 1 for single-film scanners – automatic cropping is then disabled; set to some value between 2 and 7, if the single-film scanner produces black edges or frames.

Start with 2, and increase the value if the frame is not reliably removed. You need to select the scanner before setting this value.

Large Image Size, Panorama Size

You can set the sizes of enlarged intra-oral and panorama X-rays in percent of the screen width. The defaults are 60 for intra-oral, 110 for panorama X-rays.

Address Text, Report Text

Place the practice address in Address Text, up to 5 lines. Choose “Done” to save or “Cancel” to cancel changes. This information appears on your printouts.

Report Text offers a basic letter. Change the letter here for the default – it can be adapted for each printout. The referrer (w/o address), patient, date and provider will merge – no other information is available for merging. The letters created from DEXray, unlike DEXwrite, are not saved and therefore not editable.

Background Color

Click on the down arrow to choose a background color for the main window.

Startup View

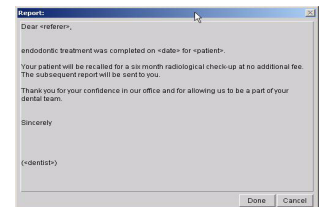
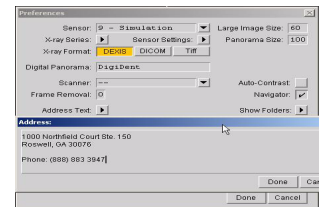
Choose the Startup View, to select the view you initially want to be visible when DEXray opens for a new patient. Mouth refers to intra-oral images in the mounted view; History refers to intra-oral images in chronological order; Pano refers to panoramic or cephalometric images. You will have the option to change views according to patient, see “Archive icon” on page 61.

ClearVu Mode

Select which mode of the ClearVu image enhancement you prefer. “General Dentistry” is best suited for detecting caries and fractures while “Perio” shows bone structures and ligatures in the crispest way.

Record Measurement

Select the results of which type of measurements you want to record as image notes: all types of measurements, canal measurements only, or no measurements at all. Whenever you carry out one of the selected measurements, you



will be asked whether to transfer the result to notes, see “Measurement icon” on page 63.

Auto-Contrast

Check the selection box to have all X-rays appear in contrast mode when initially shown.

Navigator

Check the selection box to show the Navigator when an X-ray is enlarged.

Show Folders

Click to display DEXIS software and data folders.

Initials

You may place initials into this field, which are then proposed when deleting X-rays. This is useful if the system is always being used by the same person. She/he then need not put in the initials each time she/he deletes an X-ray.

Tooltip Delay

The number in the box is the delay in time (number of milliseconds) before the Tooltip bubble appears. Choose between 0 and 9999. By choosing 0, Tooltip will not appear.

Length of RC File

Set the proposed length of the file to be displayed in Canal Measurement.

Flipped View

Choose Flipped View to have the patient’s X-rays shown in inside-out view, so that the right images appear on the right side of the screen.

5 Anterior FMS

Choose 5 Anterior FMS to have the screen accommodate 5 anterior images instead of 3.

Once you added to or changed items in DEXray Preferences, choose “Done” to save changes, “Cancel” to cancel changes.

5.4 TAKING X-RAY IMAGES

Click on the X-ray capture icon or hit “X” on your keyboard. This will open the Intra-oral X-ray screen. If applicable, choose the appropriate sensor from the numbers on the lower left area of this screen. Although you will be able to use “Other Sensor,” choosing the appropriate sensor will result in an image of better quality.

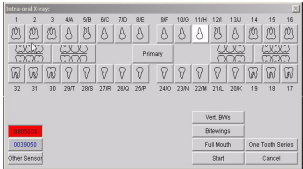
5.4.1 TAKING AN INDIVIDUAL IMAGE

Click on the desired tooth or range of teeth on the chart, or type the tooth number and hit the Enter key. The tooth will be highlighted in gold and green bands will appear (think of this as “green means go”). Also, a message will display, “Trigger the X-ray tube...” You have up to 10 minutes to take your image. After 10 minutes, you will receive a “timed-out” message. If this happens, you need to bring up the Intra-oral X-ray screen again as described above to restart the process. When you reenter this screen, DEXray remembers the tooth number last chosen. Click Start or hit the Enter key to receive your green bands.

Now, position the sensor in the patient’s mouth, position the cone close to the face and expose the sensor as you would with film (but of course using less radiation). Once radiation is detected, the sensor will capture the X-ray and the enlarged image will appear on the screen.

5.4.2 REPEATING AN X-RAY

If you want to take an X-ray of a tooth (or range of teeth) for which you already have an X-ray, enlarge the existing X-ray then click on “Repeat X-ray” in the Navigator box or hit “y” on your keyboard. This will open the Intra-oral X-ray screen with the tooth selected and automatically prepared to take another X-ray.



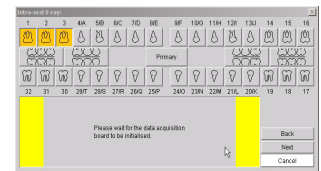
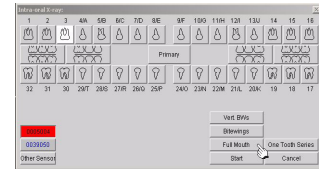
5.4.3 TAKING A SERIES OF IMAGES

From the Intra-oral X-ray screen, choose the desired series. The first range of teeth programmed into the series will be highlighted. Now, position the sensor in the patient's mouth to X-ray the highlighted teeth and expose the sensor. Once radiation is detected, a thumbnail (preview) of the image will appear on the Intra-oral X-ray screen. DEXray will highlight the next image area and will show green; your computer is ready to receive the next X-ray of the series. Note: It is not uncommon for the thumbnail to appear upside down. Remember, it is only a preview.

If you are not satisfied with your image you can use the Back button on the lower right of the screen to retake the image. If you want to skip forward to a different image area, use the Next button. Please note: You will not need to return to the computer for the duration of the series unless you want to retake or skip areas.

When the series is complete, the X-rays will appear as if in a mount. That is, DEXray will automatically mount your images for you.

For programming your own series, see “X-Ray Series” on page 44



5.4.4 ONE TOOTH SERIES

Endodontists often have the need to take several X-rays of the same tooth. You can do that without touching the computer in between by selecting “One Tooth Series” when taking the first X-ray. If this button is selected the software will automatically prepare the sensor to take the next X-ray as soon as one has been taken and is shown on the screen. You cancel out of this loop by clicking Cancel or by closing the DEXray program.

Note: Since the sensor is always prepared to take the next X-ray, certain restrictions apply:

- Do not remove the DEXIS Mobile card while in One Tooth Series mode.
- The image enhancement functions are slowed down - use them sparingly.

5.5 IMAGE MANAGEMENT TOOLS

You may control all functions in the DEXIS software by mouse-click or keyboard, whatever is more convenient for you. The Tooltip bubbles will give a short description and keystroke for each item. There is a complete listing of keystrokes in “Keyboard Use and Shortcuts” on page 120.

5.5.1 SELECTION AND NAVIGATION

All X-ray images have a tooth number, date, and close button in a band at the top (title bar) of the image. To select a specific image, click on the body of the image (the actual X-ray part of the image). The title bar turns from gray to white. To select a different image, click on that image. You may also navigate between images with the arrow keys.

You can move the small images by clicking on the title bar (the mouse cursor will become a hook) and dragging to the desired location. This location will be remembered and the image will come up in the same spot the next time you open DEXray. But there is always a “home” position determined by the tooth number, see “Home Icon” on page 61.

You may also move dialog boxes, such as the Navigator, on the screen using this function.

If you have images with the same tooth number, the newest image will be “mounted” on top of the previous image with the image’s title bar visible. Click on the title bar to bring the previous image forward.

Enlarging an Image

To enlarge the selected image, click once on the body of the image or hit the Enter key. To reduce the image, double click on the image or click on the “x” in the upper right corner or hit the Enter key. Once an image is enlarged, you may click on another image to have it appear enlarged. There is no need to reduce the first image.

The enlarged image may be moved by clicking on the title bar and dragging to the desired location. It may be resized by dragging at a side or corner; the aspect ratio will be maintained.

Image Parameters

A bar appears at the bottom of all enlarged images. In this bar the image's security status shows in a footnote:

- **DEXray by DEXIS:** Original DEXIS image, not modified
- **Original:** Other original, unmodified image
- **DEXray by DEXIS — Enhanced:** Original DEXIS image, contrast and brightness are adjusted or a filter is active
- **Enhanced:** Other original image, contrast and brightness are adjusted or a filter is active
- **Scanned:** Image scanned into DEXIS software; alteration of the scanned original cannot be excluded
- **Derived:** Image has been computed, e.g. by subtracting two images
- **Imported:** Image coming from non-DEXIS software; alteration cannot be excluded

See also “X-Ray Image Security” on page 75.

More image parameters, which may be helpful for technical support, are displayed if you click on the space between the date and the tack of an enlarged image.

Changing Brightness and Contrast

To change the brightness and contrast of an enlarged image, click and drag on the body of the image. Up for lighter, down for darker, left for less contrast and right for more contrast. You may also use the arrow keys to change contrast and brightness. The changed setting will be visible until changed again; however, you may always return an image to its original settings using the Home icon, see “Home Icon” on page 61.

Changing Tooth Number and Date, Mirroring

You may change the tooth number or numbers of an image by enlarging the image and clicking on the current tooth numbers. The Tooth box (a tooth chart) appears. Click on the tooth or teeth highlighted in gold. This will deselect the unwanted numbers. Now, click on the appropriate tooth or teeth. You may also



choose primary tooth numbers. The new number(s) will appear in a box in the lower left.

Click “Done” to save.

The image will be repositioned on the screen and show the new numbers in the upper left.

You cannot change the date of a captured X-ray image. The date showing on your computer when the image is captured becomes the date encrypted into the image, see X-Ray Image Security. To change the date of a scanned or imported image, click on the tooth number to bring up the Tooth box. It bears an additional date field, which can be edited.

If an X-ray has been inadvertently scanned from the wrong side, or if some external equipment delivered a mirrored image, you may flip it back by clicking the Mirror button in the Tooth Number box. Images mirrored this way are marked “Mirrored” to avoid confusion.

Tacking an Image

An enlarged image may be tacked to the screen by clicking on the tack button located on the right side of the title bar. An image tacked to the screen will remain in position when you enlarge another image or when you switch from intra-oral to extra-oral screen or vice versa. You may move a tacked image as you would any other image. When you have multiple images tacked or enlarged, the Home function will arrange them proportionally on the screen without overlapping, see “Home Icon” on page 61.

The Navigator

When an image is enlarged, a dialog box opens to the right of the image. If in mouth view, this Navigator box shows all images taken on the same date as thumbnails relative to their position on the DEXray screen. If in history view, it shows all visible images as thumbnails. You may click on a thumbnail to display the enlarged image.

Check the box to the left of Next after and DEXray will automatically advance through the images for this date. To turn this slide show feature off, deselect the box. The slide show feature allows an interval of 3 to 30 seconds between images, i.e., the amount of time before the next image appears. You may use the space bar to pause and restart the slide show.



You may take another X-ray of the area shown on the enlarged image by clicking Repeat X-ray or by hitting “Y” on your keyboard, see “Repeating an X-ray” on page 48.

If the Add ClearVu button is selected, enlarged images are shown side by side in two modes: standard mode and ClearVu, see “ClearVu icon” on page 60.

You may choose to clear the screen of all but the selected image by clicking on Clean or “L” on your keyboard. Click on the button or “L” again to deselect the function.

You may move among the images using the Prev (for previous) button, or “P” or Backspace on your keyboard, and the Next button, or “N” or Space on your keyboard.

Click on the Compare button to compare two images. See “The Compare Function” on page 57 for a full description of this tool.

You may hide the Navigator for an image by clicking Done. Turn off Navigator entirely in Preferences, see “Navigator” on page 47.

5.5.2 DEXRAY SCREEN ICONS

An icon will turn gold when initiated. For example, when on the intra-oral screen the “tooth” icon is highlighted. When a function icon is chosen or an appropriate key is typed on the keyboard, the selected image will automatically enlarge and the function box will open next to the image. In addition, many icons will allow you to drag an image to them thereby opening their function. Click again on the icon or corresponding keystroke to terminate its function.

In addition, DEXIS will apply the current function to another image once you click on that image. There is no need to close the current function and image to work on a newly chosen image.

Please remember, the Tooltip is available for help. The corresponding keystroke will show in the help bubble.

DEXimage icon

The Wand icon leads DEXimage to where images from intra-oral, microscopic, digital cameras or scanned photos are captured, stored and managed. Click on the icon or type “V” (for video) to initiate its function.



Intra-oral and Extra-oral icons

By clicking on the Intra-oral or “tooth” icon, you switch to the intra-oral screen.

The Extra-oral or “head” icon leads to this patient’s extra-oral X-ray screen where digitally captured or scanned panoramic or cephalometric images are stored and managed. Click on this icon or “O” (for outside) to move to this screen.

Note: By dragging an image to one of these icons, it will be moved to the appropriate screen.



Zoom icon

Use the Zoom or “Magnifying glass” Icon to magnify an area of an enlarged image. You may also type “Z” (for zoom) or drag an image to this icon to initiate its function.



Once this function is initiated, notice that a box appears on the standard-sized image. The contents of this box correspond to the visible part of the magnified image. You may click and drag the box on the standard-sized image to view a different area.

On the magnified image, the active function for the different areas is indicated by the mouse cursor: an arrow in the center which you can click and drag to change brightness/ contrast, and a magnifying glass at the edges which you can click to view a different part of the image.

Click on the Zoom icon again or double click on the body of the magnified image to return to standard enlargement.

As an added feature, once you choose the area of magnification you may tack (see “Tacking an Image” on page 52) the magnified image to the screen and select the same or another image by clicking on it and view it in standard enlargement or magnification.



Notes icon

This icon will allow you to attach text (notes, diagnoses or comments) to an image or to a selected area of the image. You may click on the icon or type “T” (for text) or drag an image to the icon to initiate the function.

You may change the type or number of an image using the selections at the top of the box.



You may type text in the box below “Notes:” or click on the down arrow to open the Select a Diagnosis or Condition screen that displays categories of conditions and diagnoses from which to choose.

If you have existing text attached to an image you will be asked to choose “Append to Note” in order to add additional text or to eliminate your current note by choosing “New Diagnosis.”

For each category, you may add, edit or replace the text by typing into the appropriate field. Click on the selection box to the left of the diagnosis or condition to select it.

If you edit or add a new diagnosis or condition, you will be asked if you wish to permanently save it.

Click “Done” to save your changes to the list of diagnoses and conditions or “Cancel” to cancel.

Once all selections are made or text is typed, click “Done” to save or “Cancel” to cancel.

The last line of text appears or the last diagnosis chosen appears on the title bar of the image as space permits.

To remove a note, open the function; delete the text and click “Done” to save.

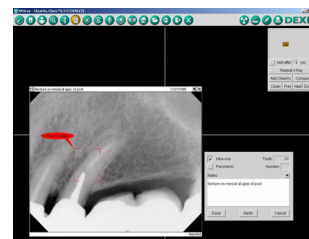
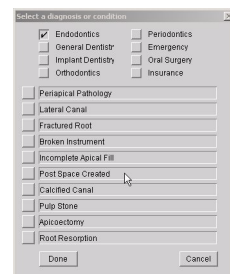
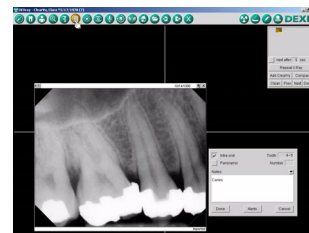
To enter Alerts referring to a specific region on the X-ray, open the Notes function and then click on “Alerts”. Again, you may type text here, or pick from the list as described in the previous section. To place additional Alerts on the same image, click on the Next button and add your Alert as previously described.

Before clicking “Done” for your final save, click and drag to draw a box around the area of concern. Now click “Done” to save. A red box now shows on the image.

Your message will appear when the cursor is stopped in the box of an enlarged image or when you click in the red box of a standard-sized image. The up to 5 lines of the full text will be visible. To remove the text and the box, open the notes function again then open Alerts. Delete the text and click “Done” to save.

Enhancement icon

Click on the Enhancement icon or type “E” to use different display modes.



Please note: These modes **do not alter the image files**; they instead extract different information from the image files and emphasize the display to aid in your diagnosis. A mode that aids in diagnosis for one condition may not with another condition. Please inspect the modes thoroughly and experiment with them; you may always return the image to its original settings using the “home” icon, see “Home Icon” on page 61

The top of the Enhancement dialog box shows a histogram of the selected image and a curve showing the current contrast and brightness setting. You may manipulate this curve by clicking and dragging at the two crosses.



Contrast

This mode displays the image in a more contrasted way. This mode was designed to help in cavity detection. The keystroke for this feature is “C.”



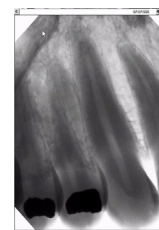
Neutral

This feature will restore the image back to its neutral settings. The keystroke for this feature is “t” (for take back).



Invert.

Invert or the keystroke “I” displays the image in negative mode. Click and drag in the center of the image or use the arrow keys to change brightness and contrast. Click again to turn off Invert



ClearVu

This mode clarifies and sharpens the image. Click on ClearVu or “U” on your keyboard to use the ClearVu function. When “General Dentistry” ClearVu mode is selected in Preferences (see “Setting DEXray Preferences” on page 43), ClearVu resets the brightness and contrast to neutral; to change, click and drag in the center of the image or use the arrow keys. Click again on ClearVu or type “U” to turn the feature off. This mode is remembered between sessions. This means that if you leave it turned on, images will always appear in ClearVu mode until you turn it off.



Darker

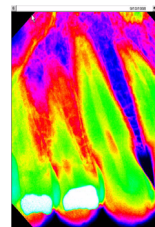
This mode compensates for density differences on the image and is highly recommended for bitewing images. Click and drag in the center of the image or use the arrow keys to change brightness and contrast. Click again on Darker to turn the feature off. This mode is remembered between sessions. This means that if you leave it turned on, images will always appear “darkened” until you go back and turn it off.



Color

This mode colorizes the image. Click and drag in the center of the image or use the arrow keys to change the colors. Click again on Color to turn the feature off.

Please note: You may combine Invert with ClearVu and Invert with Color.



The Compare Function

Compare allows for the comparison of two images either side-by-side or overlaid in different modes to ascertain their differences. It was designed in response to requests by the research community; however, all DEXIS owners have the opportunity to use this function.

Select your first image, usually the newer of the two. Click Compare in the Navigator box (see “The Navigator” on page 52) to open the X-ray Comparison box. The software will show the selected image and an older one of the same tooth next to each other. The Comparison box gives you the choice to select a different image to compare to by listing all images of the same tooth and “Other”. When you selected “Other” or there is no image with the same tooth number,



you will be asked to choose your second image by clicking on it. You can now select one of the four comparison tools: Show Side-by-Side, Color Addition, Subtraction, Red-Green Stereo.

Show Side-by-Side

This is the default mode. It shows the two images next to each other and proportional in size.

Choose one of the remaining tools, and the images are overlaid with the selected tool applied.

Aligning Images

Since two images will rarely be captured using the exact same angle or position, it will be necessary to align the two using the following methods – the active function will be shown through the shape of the mouse cursor:

Click and drag in the center of the image to reposition the entire second image on top of the first.

Stretch the second image horizontally by clicking and dragging on the side or vertical margins of the image.

Stretch the second image vertically by clicking and dragging on the top or bottom or horizontal margins of the image.

Rotate the second image by clicking and dragging in a corner of the image.

Alternatively, you may use the “+”, “-“, and “o” buttons in the upper part of the X-ray Comparison box:

Horizontal Shift: move the second image to the left (-) or right (+).

Vertical Shift: move the second image to down (-) and up (+).

Rotation: rotate the second image counter-clockwise (-) or clockwise (+).

Horizontal Stretch: shrink (-) or stretch (+) the second image horizontally.

Vertical Stretch: shrink (-) or stretch (+) the second image vertically.

Click on the “o” to return the function to the original value.

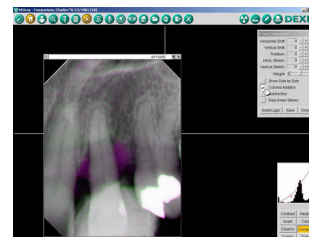
The Weight tool shifts the appearance of one image over the other.

Colored Addition

The goal of Colored Addition is to have areas of common density appear gray and the non-common areas in green or magenta. The color areas are changes in density from the first X-ray to the next.

Once your images are aligned, use the Weight scale if necessary. By moving the sliding bar to the left the second image (in green) becomes more visible or has more “weight.” Move the bar to the right and the first image (in magenta) becomes more visible or has more “weight.” By moving the bar to balance the weight, gray areas (common densities) appear.

On the combined, aligned image, magenta areas are areas of greater density on the first image while green areas are areas of greater density on the second image.



Subtraction

The goal of Subtraction is to have areas of common density appear gray and the non-common areas in light or dark. The light and dark areas are changes in density from the first X-ray to the next.

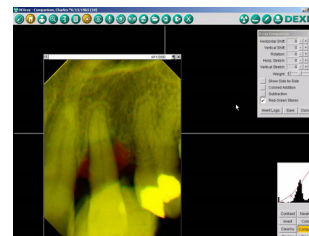
Once your images are aligned, use the Weight scale if necessary. By moving the sliding bar to the left the second image (in green) becomes more visible or has more “weight.” Move the bar to the right and the first image (in magenta) becomes more visible or has more “weight.” By moving the bar to balance the weight, gray areas (common densities) appear. The second image is subtracted from the first one, which means that if you give more weight to the second one, the resulting image will appear negative.

On the combined, aligned image, lighter areas are areas of greater density on the first image and darker areas are areas of greater density on the second image.



Stereo

The goal of Stereo is to achieve a 3-D appearance. Choose two images for the same area that were taken at slightly different angles (8 degrees or less). When viewed with 3-D glasses (red-green lenses), the combined image appears in 3-D. The Weight tool can also be used to enhance the 3-D image.



Invert Logic

Use Invert Logic to reverse the properties of the compared images; i.e., have the second image take over the role of the first one and vice versa.

Save

You may save the combined images as an additional image by choosing “Save”. The new image will have the current date and the parameter “Comparison: (date of first image) vs. (date of second image)” When using “Color Addition” and “Stereo” the saved, combined images will appear on the X-ray screen and print in color. The security bar will show “Derived”.

ClearVu icon

The ClearVu or “eye” icon is a shortcut to the ClearVu mode. Two modes are available and can be selected in Preferences: “General Dentistry” and “Perio”, see “Setting DEXray Preferences” on page 43. As discussed under Enhancements, click on ClearVu or “U” on your keyboard to use the ClearVu function. This mode clarifies and sharpens the image. Click and drag in the center of the image or use the arrow keys to change brightness and contrast. Click again on ClearVu or type “U” to turn the feature off.



Voice Notes icon

To attach a voice note to an image you must have a sound card and microphone attached to your computer.

To start, click on the Voice Notes icon or type “S” for sound. This opens the “voice recorder.” There are buttons for rewind, record, play, stop and fast-forward.

To record, click on the “Record” button (circle symbol) or type “R” on your keyboard.

After recording the message, click on the “Stop” button (square symbol) or type “S” on your keyboard. Click “Done” to save.

Musical notes will appear in the upper left corner of the image to the right of the tooth number(s). Click on these musical notes to play the sound attachment. Alternatively, you can re-open the Voice Notes function and click on the “Play” button (single forward arrow symbol) or type “P” on your keyboard.



To stop, click on the “Stop” button (square symbol) or type “S” on your keyboard. In addition, rewind by clicking on the “Rewind” button (double-arrows to the left) or type “B” on your keyboard; fast-forward by clicking on the “Forward” button (double arrows to the right) or click “F” on your keyboard. To delete the voice note, click on the “Erase” button.

When adding to a previous sound note, you have several options:

Use the “Forward” button to “wind the tape” to the end before recording. This will append the new recording to the end of the existing recording.

Start recording to insert the newer recording before the existing recording.

Erase the existing recording and begin again.

Rotate icon

Although DEXIS software orients captured X-rays automatically, occasionally the proper orientation cannot be recognized. In this case the image (standard and enlarged) may be rotated using the Rotate icon. You can also type “R” on your keyboard or drag the image to the icon to rotate it in 90-degree increments.



Home Icon

The “Home” function is activated by clicking on the “Home” icon, by typing “B” (for back) on your keyboard, or by dragging the image to the icon.

There are 3 sub-functions of the “Home” icon:

1. Return the contrast of an enlarged image to standard settings. The function toggles between neutral setting and contrast setting.
2. Standard images that have been moved from their original position are placed back by clicking the Home icon when no image is enlarged.
3. Tack one or more images to the screen using the “tack” in the upper right corner of an enlarged image. Click on the Home icon. The images appear enlarged and proportionately sized without overlapping.



Archive icon

The “Archive” icon allows access to the patient’s entire image history. Equate this feature to searching through a patient’s chart to choose which films are to



be placed on the view box for the current procedure. To “file” an image or to place it in the Archive, close a standard-sized image using the “x” or drag it to the icon and a box will open asking you to Archive or Delete. Choose Archive and the image will be placed in the archive.

Archive Screen overview

Click on the “Archive” icon or type “H” for a “history” of images for the patient in order to open the Visible Images screen.

Visible Images refers to the images that are currently visible on the screen. Again, this may be changed for every patient and every procedure.

All images are listed in the center area by tooth numbers and dates. A small selection box is located next to each. This part of the screen is set up in quadrants-UR, UL, LR, LL and bitewing area in the center.

There is also an area that resembles a tooth chart. Teeth in gold with a black outline have images that are visible on the current X-ray screen. Teeth in gray with a gold outline have images that are currently archived or hidden so they are not visible on the current X-ray screen. Teeth in gray with a black outline have no images.

Choosing Visible Images

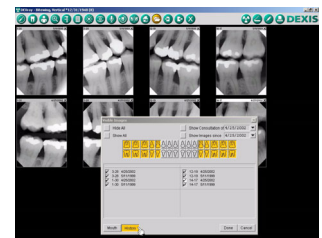
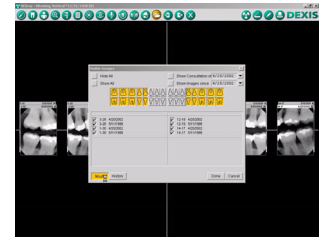
You may choose to hide all the images by clicking the “Hide All” button in the upper left of the screen or to show all the images by clicking on the “Show All” button.

You may pick images taken on a certain date by using the drop down arrow next to Show consultation of and clicking on the desired date. You may pick images taken since a certain date by using the drop down arrow next to “Show Images” since and clicking on the desired date. When the date(s) are chosen, the image selection buttons for those specific images are checked.

You may click on the image selection box to select and deselect individual images.

In addition, you may click on the actual image on the X-ray screen to select or deselect the image.

For help in identification, the selected image on the X-ray screen has its box highlighted in Archive.



To view your selected images in a mounted format, click on the Mouth button on the lower left of the screen.

If you want to view your selected images in chronological order, choose the “History” button. The “History” view is helpful when performing a procedure for one tooth or area, such as endodontics. Once this view is chosen and you return to the X-ray screen, all captured images will also appear in chronological order.

After making your selections, click “Done” to see only the requested images in the requested view.

DEXray allows you to see all images for a certain tooth or area from different dates. For example, if a patient has pain on tooth #1, open “Archive”, click on “Hide all” and click “tooth #1” on the tooth chart. Next, choose the desired view and then “Done”. All images that include tooth #1 will appear on the screen in the view you selected.

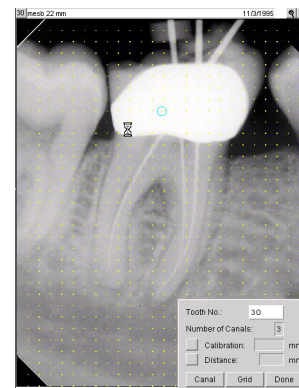
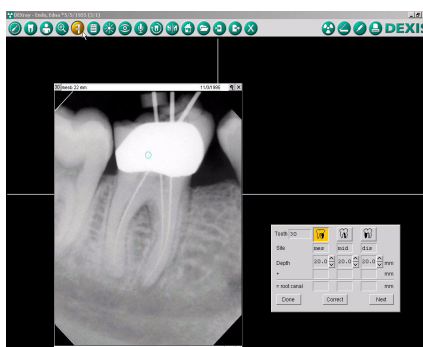
Measurement icon

The Measurement tool is primarily used for endodontic and implant measuring, although any area on an image may be measured, e.g., a periodontal defect or overhanging margin.



General Distance Measuring

To begin, enhance the image to its optimum contrast. If desired, enlarge the image by resizing. Click on the Measurement icon or type “M” on your keyboard. This opens the measuring function box



Grid

Click on the “Grid” button. This displays a millimeter grid on the image (centimeter grid for panoramic and cephalometric images). This grid, of course, is in relation to the sensor and does not take into account the foreshortening or elongation of an image.

Distance

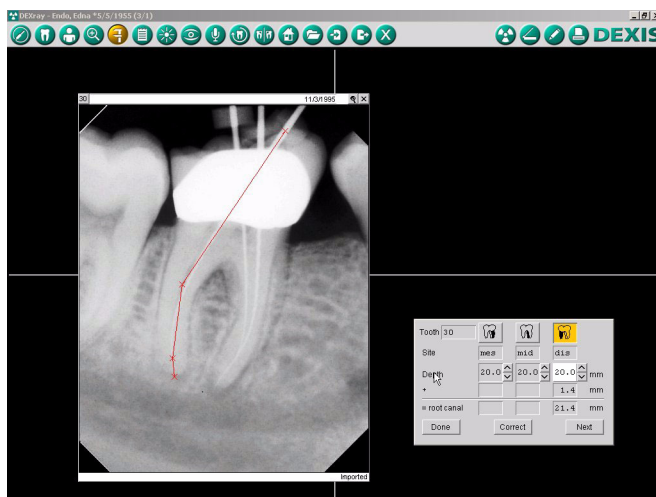
Click on the selection button to the left of Distance. Click on the image at your start point. You can continue the measurement by adding additional points as necessary, DEXIS will add each subsequent distance to the previous one. These multiple points allow you to follow the shape of anatomical structures. You may use Delete or Backspace on your keyboard to delete points beginning with the last one entered. You may also drag points (shown as crosses) and insert new points by clicking and dragging on segments to conform to shapes once your final measurement is obtained. The total distance is shown in the function box.

Double-click the “Distance” selection button to start a new measurement.

To measure using your keyboard, move the green circle to a start point using the arrow keys, then hit Enter to establish a point. Next, move the new green circle to the next point and hit “Enter”. Continue until you have the desired area measured.

Endodontic Measurement**Initial Measuring with the Distance Feature**

To obtain the initial lengths of the canals before files are set, you need to use the general distance measurement as described above. Click on the image at a starting point where the rubber stopper would contact the tooth. Using multiple clicks, follow the shape of this first canal. Make a note of the distance shown. Next, measure the remaining canals in the same fashion. Since this measurement is not calibrated, take into account that the canal(s) may be shown elongated, i.e., the actual canal length might be shorter than the measurement suggests.



Canal Feature

The Canal Measurement compensates for projection errors by calibrating the measurement with the known length of the endodontic file. To use this feature, the image must show the entire tooth and the initial file(s) must be set.

Open Measurement, change the number of canals if applicable and then click on Canal. Click on the Site boxes to change or give the canal an abbreviated name that refers to its location.

Adjust the file lengths in all the “Depth” boxes by using the up and down arrows or by typing the number in the box. These distances, from the rubber stoppers (or handles) to the end of the files, are known values. The software will need to know these lengths in order to calibrate the remaining information to compensate for possible image elongation or foreshortening.

The default length of 20mm may be changed in DEXIS preferences.

Measuring with the Canal Feature

Starting with the canal whose site box is highlighted in gold, return to your image. The Canal function needs three clicks: Click on the beginning of the file where the rubber stopper touches the tooth, then click on the end of the file,

and then click on the apex. The software will automatically insert a forth point to make the line a smooth curve and also to make it follow the shape of the canal. You may drag the points to further adjust them.

Keyboard users may select the Correct button to adjust points. After selecting Correct, hit Enter and use Backspace to move to the desired point. Then use the arrow keys to reposition the point. Hit “Enter” to save the changes.

The measurement dialog box shows the distance between your end-of-file point and the apex- point and the entire length of this canal (the sum of the file length and the remaining distance). Click “Next” to go to the next canal and repeat the process.

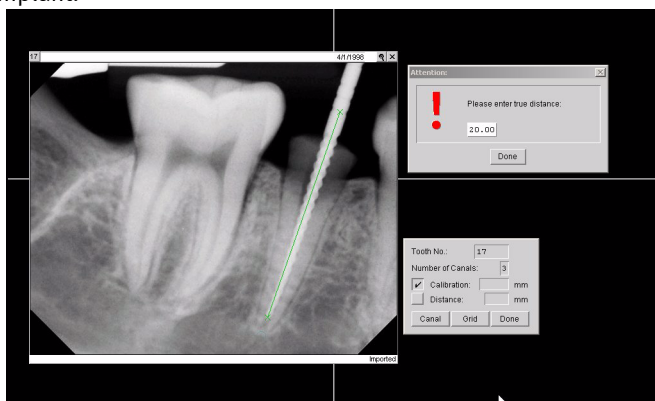
Saving information

Once you finish with all canals, click “Done”. When asked to “Transfer results to notes?” choose “Yes” and the new lengths will be listed in the Notes and appear on the image in its title bar. This feature can be switched on and off in Preferences.

Calibrated Measurement

The Calibration feature provides a more general method to compensate for projection errors by comparing to a known length. It is most often used by the implant community. To calibrate, there must be an object of known length entirely visible on the image. Also, the area to be measured must be along the same axis as this known object. An example of such a known object is the thread of

an implant or the length of a directional post being placed prior to placing the actual implant.



Open Measurement and click on “Calibration”. Click on the beginning and end of the known object. An “Attention” box will open and the approximate length of the object will be shown. You will be asked to “Please enter true (or your known) distance” to replace the shown distance. If these distances are the same, your image is not foreshortened or elongated. If not, enter the true distance and click “Done”.

Now, measure along the same axis using the techniques for Distance; you may use multiple clicks. The new measurement will compensate for any foreshortening or elongation. It will appear in red on the image and in the measurement box under Distance in mm.

Bone Density Measurement

The radiographic density of the X-rayed material directly relates to the gray level of the resulting image. If you click on the Density button then drag a rectangle on the image, the median density of the selected area will be shown as percentage:

- 0% = black = lowest density
- 100% = white = highest density

The values shown relate to the original image and are not modified by modifying brightness or contrast.

Quit icon

Click on the “X” icon, type “Q” (for quit) on your keyboard, click on the “x” in the upper right corner of the screen, or hit the “Esc” key to leave the patient’s DEXray screen.

**X-Ray Capture icon**

Click on the X-Ray Capture icon or type “X” on your keyboard to open the Intra-oral X-Ray Capture screen in preparation for capturing images, see “Taking X-Ray Images” on page 48.

**Scanner icon**

Click on the Scanner icon or type “S” on your keyboard to open the scanner software in preparation for scanning X-rays, see “Scanning X-Ray Films” on page 91.

**DEXwrite icon**

Click on the DEXwrite icon or type “W” on your keyboard to open the DEXwrite program for the selected patient, see “DEXwrite: Chairsides Report Generator” on page 97.

**DEXIS Logo icon**

Click on the DEXIS Logo icon or click “I” on your keyboard to obtain program information, the DEXray Preferences button and these two additional features:

**Help**

Click on this button and your cursor gains a “?” Now, click on an item on the DEXray screen and the manual will open in Acrobat Reader to the page that describes that item’s function.

DEXIS Web Site

Click on this button to open the DEXIS web site in your browser.

Click “OK” to close the Program Information screen.

5-5.3 COMMUNICATIONS: PRINTING FROM DEXRAY

Before printing from DEXray, please verify that your printer functions outside DEXIS.

Note: Images should be enhanced prior to printing.

Click on the Print icon, or type “P” on your keyboard to open the Windows Print Dialog. This dialog allows you to select a different printer and to access the printer settings. You may also open the Windows Print menu by dragging an image to the Print icon.



Print Dialog Overview

From the Windows Print dialog, choose “OK” to open the DEXIS Print Dialog. You will notice that this screen is similar to the Archive screen. All visible images are listed in the center section by tooth numbers and dates. A small selection box is located next to each. In addition, this part of the screen is set up in quadrants-UR, UL, LR, LL and bitewing area in the center.

You may choose images taken on a certain date by using the drop down arrow next to Print Consultation of, and clicking on the desired date. You may choose images taken since certain date by using the drop down arrow next to Print Images since and clicking on the desired date.

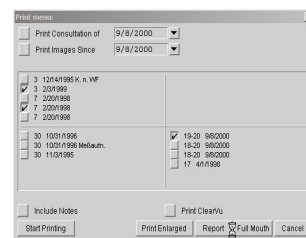
When the date(s) are chosen, the image selection boxes for those specific images are checked.

You may click on the image selection box to select and deselect the images for print.

In addition, you may click on the actual image on the X-ray screen to select and deselect the image for print.

For help in identification, the selected image on the X-ray screen has its box highlighted.

When you are finished selecting the images, choose to print the image with the notes attached to it and/or print in ClearVu.



Choose a print format

- “Start Printing” for 6 images per page
- “Print Enlarged” for 2 images per page

- “Full Mouth” to print images in landscape or horizontally on the paper similar to a full mouth mount
- “Report” to add the images to the standard report. The text of the standard report can be modified in DEXIS Preferences; the text of an individual report can be modified before printing. In the report the referring dentist, patient, date, and provider information will be merged. Arrow down to change the text as needed; you are changing it for this patient only. Now, choose “Done” to start printing. Please remember, the letter will not be saved in DEXIS nor can you change font or layout. Only DEXwrite offers this feature, as well as other merging and format possibilities.

Once you choose one of these functions, the information will be sent to the printer.

“Add to Printout” will allow you to print additional images on the last page printed for this patient. This feature is for standard sized images given only with the “Start Printing” button. It can be used to add an intra-oral camera image to a previously printed intra-oral X-ray to the same page. After the initial print, insert the paper, choose your images and choose “Add to Printout”.

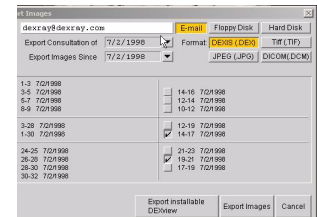
5.5.4 COMMUNICATIONS: EXPORT

Click on the Export icon or type “>” on your keyboard to open the Export Images screen. Alternatively, you may drag an image to the Export icon to open the Export Images screen.



Choose a destination:

- “E-mail” to send images electronically
- “Floppy Disk” to copy images to a floppy disk
- “Hard Disk” to copy images within your own system
- “to:” The area to where images will transfer appears in a box on the upper left marked “to:” You may type a destination folder into this box.



Choose a format

DEXIS to move images within your own DEXIS system or to send to colleagues with DEXIS or DEXview.

TIFF (.TIF) or JPEG (.JPG) to export images for use by other software programs. These formats are generally accepted by word processing and graphics software programs.

DICOM is for colleagues who have DICOM-compliant software. DICOM is a universal digital format for medical and dental images. The image carries patient information and the date on which the image was taken. Dentists with DICOM-compliant software from different suppliers should be able to exchange X-rays along with the medical information attached to them.

Choose images

You may choose images taken on a certain date by using the drop down arrow next to Export Consultation of and then clicking on the desired date. You may choose images taken since a certain date by using the drop down arrow next to Export Images since and then clicking on the desired date. When the date(s) are chosen, the image selection boxes for those specific images are automatically checked.

You may click on the image selection box to select and deselect the images for export.

In addition, you may click on the actual image on the X-ray screen to select and deselect the image for export.

When you drag an image to the Export icon, that image is automatically selected.

For help in identification, the selected image on the X-ray screen has its box highlighted in Export Images screen.

Send images and/or DEXview:

Export images + DEXview to export images and the DEXview program

Export installable DEXview to export only the DEXview program for installation on a different computer

Export Images to move images within your system, to send images to colleagues who use DEXIS or to send images to colleagues who have previously installed DEXview

Click “Cancel” to cancel the export process

Once you make your selection and the export is accomplished, the Export Images screen will close.

5.5.5 ADDITIONAL INFORMATION

Move Images to the Correct Patient

The Export function may be used to move an image that was taken on the wrong patient's screen. By choosing Hard Disk, selecting images and then choosing Export Images, the images move to the DEXIS communication folder ready to be imported into the correct patient's screen, see "Communications: Import" on page 73.

Please note: these images are not removed from the incorrect file; they are simply copied. The images will need to be deleted from the incorrect file.

Send a Set of X-Rays on Floppy Disk

To send a set of X-rays to a colleague who does not have DEXIS, choose Floppy Disk and DEXIS format and then select the desired images. Now choose to Export images + DEXview, to send the images with DEXview. Your colleague simply needs to insert the floppy disk and double-click on DEXview to view the images.

E-mail Images

Choose E-mail and the appropriate format and then select images. Either add the recipient's e-mail address to the "to" field behind the ">" sign, or add it later to the message in your e-mail program. Now, choose Export installable DEXview to send only the viewer, or Export Images to send only the images. For security reasons you may not send images and DEXview together. Once the screen closes, your e-mail program will open with a new message created with the X-rays attached. Send the message as you would any other e-mail message.

Place images directly into word processing programs

To copy an image to a word-processing program such as Word or WordPerfect, enlarge and enhance the desired image, hold down the Control key and type the "C" key. Typically, you will hear a tweeting sound verifying export. Now,

open your word-processing program and hold down the Control key and type the “V” key or use the Paste icon. The image will appear on the document ready for sizing.

DEXview

DEXview is a mini-software program that allows your colleagues to view, enhance and save DEXIS images without installing the full DEXIS program. DEXview runs on any Windows computer. You may freely distribute DEXview. Two packagings are available:

You can export “Images + DEXview” onto a diskette. The receiving dentist opens the diskette by double-clicking on My Computer, then double-clicking on the floppy drive. She/he then opens DEXview by double-clicking on it. It will show the images on the diskette.

You can send “Installable DEXview” by diskette or e-mail. This is a SETUP program which, when executed, installs DEXview as the software for opening DEXIS images with the file extension .DEX. After DEXview is installed, your colleagues can open DEXIS image files by double-clicking on them. DEXview will open and show the image.

Now, each time an image file is opened, your colleague will be able to view the image, use ClearVu, change the contrast using click and drag, use home, rotate, mirror image. Tooltip is available for help. Use the arrows to scroll through the images on the disk. In addition, the images may be saved to a file in various formats by using the Export icon.

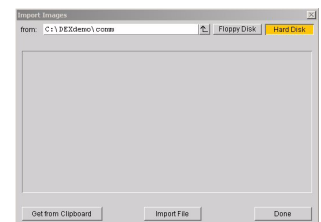


5.5.6 COMMUNICATIONS: IMPORT

Click on the Import icon or type “<” on your keyboard to open the “Import Images” screen.

Choose a Source

- “Floppy Disk” to import images from a floppy disk
- “Hard Disk” to import images within your own system, typically from the DEXIS communication folder.
- “from:” The area from where images will transfer appears in a box on the upper left marked “from:.” You may change the location by typing, go one level



up by clicking the button to the right, or select a subfolder from the list below.

Images contained in the selected folder are listed: file name; patient name; tooth number(s), if applicable; date; note attached to the image, if applicable.

To import the file, click on the desired file and click on “Import File”, double-click on the file or arrow to the file and hit the “Enter” key.

Continue importing image files using the same process. Imported files will disappear from the list. When you have imported all desired files, click “Done” to close the Import dialog box. The images will now appear on the patient’s screen.

Please note: If importing an image with a different patient name, you will receive a warning message and will need to choose “Yes” to import or “No” to cancel the process.

Get from Clipboard

After the desired image is placed onto the Windows clipboard from another program, open the patient’s screen and the Import Images screen. Click on the “Get” from Clipboard button and click “Done.” This image will now appear on the patient’s screen.

5.5.7 ADDITIONAL IMPORT INFORMATION

Import from Patient’s Screen

If you know the patient’s name whose images are stored on a floppy disk, select the patient’s proper screen, insert the disk in your floppy drive and import that patient’s images following the import directions as described in the previous section.

Import from Outside DEXIS

Open a floppy disk containing images outside DEXIS. Or open an e-mail attachment of an image.

After opening an image in DEXview you may send it to DEXIS by clicking on the Export icon on the DEXview screen. Scroll through the images using the arrows and export all desired images in this manner.

Now, open DEXIS Administration. Click on the Import icon. This icon will only be visible if images are waiting to be imported. Highlight an image and click on “Select Patient”. DEXIS will choose a patient with the same name or, if none is found, will open a new Patient Data screen. Add the appropriate information and click “Done” to save.

If a new Patient Data screen appears but you wish to choose a patient on record, click “Cancel” to return to the patient list.

Proceed to the patient’s screen and import the images as previously described. Only images appropriate to that particular screen will appear for import.

5.6 X-RAY IMAGE SECURITY

Beginning with video imaging, there has always been a concern about the medical/legal aspects of the image. Can the image be altered? And if so, will it be acceptable in a court of law?

It is common knowledge that any form of digital image can be changed in a commonly available image-processing program. However, DEXIS images have a built-in Digital Signature feature. When an X-ray is captured and stored to disk, a code is computed from the image using encryption methods. This “digital signature” is stored together with the image and compared when the image is loaded. Three cases are distinguished and displayed:

1. The digital signature matches the image contents. The image is labeled “Original.”
2. The digital signature does not match the image contents. The image has been tampered with; it will be labeled “Modified.”
3. There is no digital signature present. The image has been imported into DEXIS from elsewhere. The software cannot decide whether it is original or modified. This image will be labeled “Imported.”

5.7 WORKING WITH PANORAMIC AND CEPHALOMETRIC IMAGES

DEXIS allows for the capture and storage of panoramic and cephalometric images in the Extra-oral DEXray screen. You may digitally capture images, see “DEXpan” on page 127, or scan standard film, see “DEXscan: Scanned Images”



on page 91 in order to place them into this screen. Once there, images are available for use with the Image Management Tools.

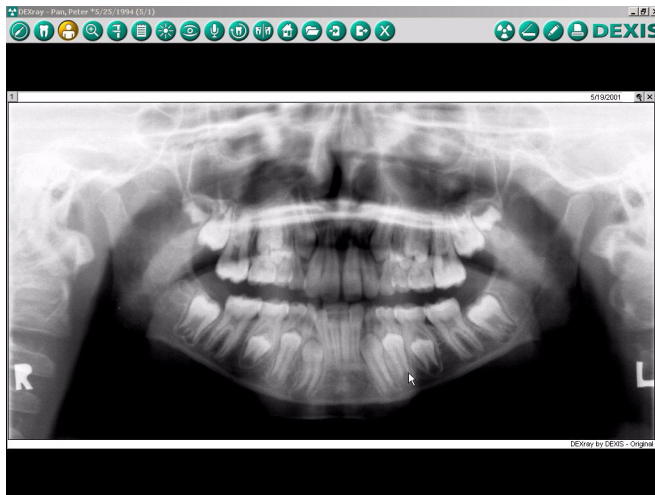
Please refer to the Image Management Tools for the Intra-oral screen section (“Image Management Tools” on page 50). Since the majority of the icons and functions are the same for both screens, only the differences are listed here:

There is no Canal function (or related functions) under Measurement.

Since all images are displayed in chronological order, there is no choice of Mouth or History view in Archive.

The X-ray capture button functions only if digital panoramic equipment is installed or if Simulation is chosen in DEXray Preferences.

Due of the size and shape of panoramic and cephalometric images, the images always print in landscape when Start Printing, Print Enlarged, or Full Mouth is chosen. Diagnosis and ClearVu are options. Add to Printout and Report are not available.



CHAPTER 6

DEXimage: Photographic Images

The DEXimage program is the main software application for acquiring, storing, displaying, and sharing “light-based” digital photographic images.

DEXimage is an important adjunct program to the DEXray program. Simply stated, DEXimage is to light-based images what DEXray is to X-ray images.

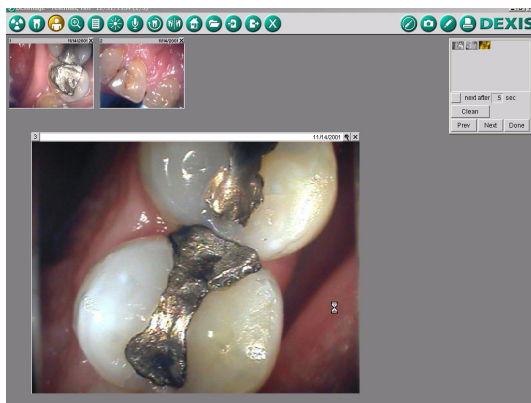
DEXimage works with two principal types of Photographic equipment: extra-oral Digital Cameras and Intra-oral Video Cameras and variations thereof. DEXimage displays both still and video images in both color and monochrome, although only still images may be stored on the computer’s hard drive.

Like DEXray, DEXimage is also a sophisticated piece of software that has been carefully designed and developed to be easy and quick to learn and intuitively easy to use. Icons and function buttons enable the user to move, size, enhance, measure, save, and compare images with just a click and/or drag of the mouse.

6.1 DEXIMAGE SCREEN OVERVIEW

You may open DEXimage from the DEXIS Administration screen or a patient’s DEXray screen by clicking on the DEXimage icon on either screen. Practice management programs may contain a direct link to DEXimage, but typically you need to access DEXimage through DEXray if you are linked.



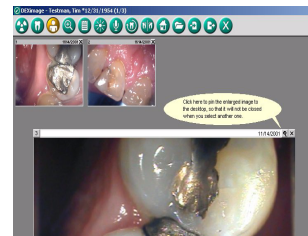


You may apply certain Windows functions to this screen. You may size the screen using click-and-drag. You may also use the three buttons in the upper right to minimize the screen (thus sending it to the task bar – click the tab to bring it back up), maximize or restore a screen, or close a screen. For more information on screen sizing and multiple screens, see “Screen and Window Adjustments” on page 125

The patient information is shown in the header bar; function icons are located across the top of the main window. Place your cursor on any of the icons and buttons and a help bubble, called a Tooltip, appears with information about the function. Often, there is also a keystroke that will execute the function. The Tooltip help feature is available throughout the DEXIS system. Many of the functions in DEXimage are equivalent to the corresponding functions in the DEXray program. In these cases we will refer to their description in the DEXray chapter..

The DEXIS Logo icon gives access to program information, DEXimage Preferences, Help, and DEXIS Web Site.

Like DEXray, DEXimage contains separate screens for intra-oral images that may be positioned according to tooth numbers, and for extra-oral images that do not require tooth numbers. In contrast to DEXray, you may decide to place all your photographic images on the extra-oral screen by setting the default accordingly. If you do that, all images will be placed in chronological order, and you need not give tooth numbers to your intra-oral images.



6.2 SETTING DEXIMAGE PREFERENCES

You may access the DEXimage preferences in two ways:

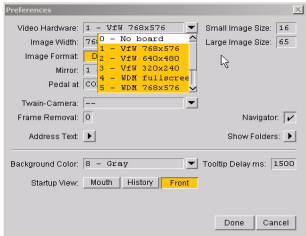
From DEXIS Administration, click on the “wrench” icon to open Tools and Preferences; select DEXimage Preferences

From a patient’s DEXimage screen, click on the DEXIS logo to open the Program Information screen; select Preferences.

Video Hardware

You may select which interface to use for your video capture card and which size the live video image should have. The best choice is usually “WDM Full Screen”, which uses the WDM interface and shows the live video image filling the entire screen. On some older Windows 95 systems, this choice might not work, and you might have to select any of the “VfW” settings. If you use “VfW,” the window size has to match the size of the live video set in the capture card’s driver. See also “Hardware Installation” on page 10. Choose No Board for workstations where video images will not be taken. You may also choose Simulation to have DEXimage simulate taking video images.

The fields Image Width and Image Height contain the size of the window for the live video image. You may modify the size if none of the proposed sizes fits your needs. If Image Width or Image Height is set to zero, full screen format is assumed.



Small Image Size

Defines the size of the small images expressed as percentage of the screen width. The default is 16.

Large Image Size

Defines the size of the small images expressed as percentage of the screen width. The default is 65.

Image Format

DEXIS stores the images in one of three image file formats: the proprietary DEXIS format, a compressed format; uncompressed TIFF, helpful if your Practice Management software is to directly access the images; DICOM, standard in a hospital environment. The default and recommended format is DEXIS. When

exporting images you may still ask for a different format and the DEXIS software will convert the images for you.

Mirror

Use the Mirror setting to compensate should your camera capture in reverse. A simple test: Capture an image of printed material. If the print appears backwards, then all captured images will be reversed.

Choose:

- “Never” to have images on intra-oral and extra-oral screens never reverse.
- “Intra-oral” to have images captured on the intra-oral screen be reversed
- “Extra-oral” to have only images captured on the extra-oral screen only reversed
- “Always” to have images on intra-oral and extra-oral screen always reverse.

Please note: You are choosing a default setting. You will have the option to change “Mirror” in the Live Video screen and on the actual DEXImage screen for any given picture as well.

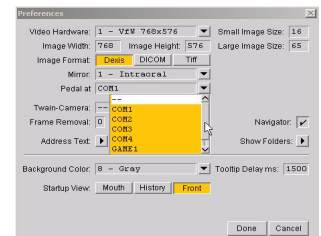
Pedal

If you use a foot pedal or another external switch, choose the appropriate port. Footpedals may be connected to a serial port or to a game port. Choose -- for no external switch. See also “Hardware Installation” on page 10

Twain Camera

Click on the down arrow to select from the list of installed digital cameras and scanners using the Twain interface. Though still image acquisition in DEXImage usually uses a camera, you may also select a scanner here. If you do not acquire pictures from a digital camera or scanner, or if your camera pictures are transferred through memory cards, select “—”.

Note: most digital cameras do not have Twain drivers but use memory cards which are shown as drives in Windows Explorer, when the camera or card reader is connected. In this case set Twain Camera to “—”.



Frame Removal

If your scanner or digital camera produces unused edges or frames, you may set this entry to a value between 1 and 6. Start with 1 and increase the value until the frame is removed. You need to select the camera or scanner before setting this value.

Address Text

Place the practice address in Address Text, up to 5 lines.

Once entered in DEXray Preferences, the same text will appear here. This information appears on your printouts.

Background Color

Click on the down arrow to choose a background color for the main window.

Startup View

Select the view you want to be initially visible when DEXimage opens for a new patient: Mouth refers to intra-oral images in the mounted view; History refers to intra-oral images in chronological order; Front refers to extra-oral or facial images. You have the option to change the view for each patient, see “Archive icon” on page 89.

Navigator

Check the selection box to show the Navigator when an image is enlarged.

Show Folders

Click to display DEXIS software and data folders.

Tooltip Delay

The number in the box is the delay in milliseconds before the Tooltip bubble appears. Choose between “0” and “9999”. By choosing “0”, Tooltip will not appear.

Once you have made your selections, choose “Done” to save changes and “Cancel” to cancel changes.

6.3 TAKING DIGITAL PHOTOGRAPHS

The Camera icon on the DEXimage screen is used to acquire digital photographs from a still image digital camera or from a scanner.



There are two paths to acquire photographs from a digital camera; which one you use depends on the camera model:

Most modern digital cameras store images on memory cards. The pictures are transferred to the computer through a card reader that allows the memory card to appear as a disk drive. Card readers may be connected via USB or have adapters that fit into the PC Card slot. Some cameras have built-in card readers that support the same path.

Some cameras and practically all scanners support the Twain interface, which allows applications to launch the camera/scanner software and request pictures from it.

Please note: Before attempting to use your digital camera with DEXIS, please install your camera's software (if applicable) and test its function outside DEXIS, see "Installation Verification and Testing" on page 114.

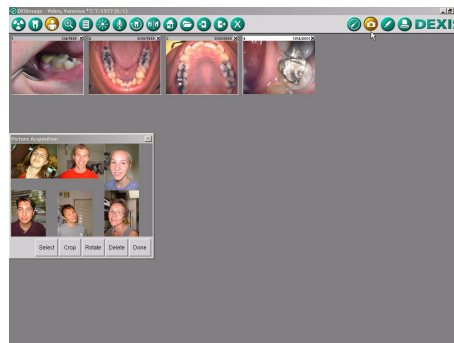
6.3.1 MEMORY CARD WITH CARD READER

Make sure the Digital Camera is set to "—" in Global Preferences or DEXimage Preferences. Choose your patient and open DEXimage.

Insert the memory card into the reader.

Click on the Camera icon to open the "Picture Acquisition" box to view the images stored on your memory card. Click on the picture. You may now Rotate or Crop the picture before choosing "Select" or dragging it to the DEXimage screen. You may also "Delete" the picture from the memory card.

If a picture is to be placed onto the intra-oral screen, you will be prompted to assign a tooth number.



6.3.2 TWAIN INTERFACE

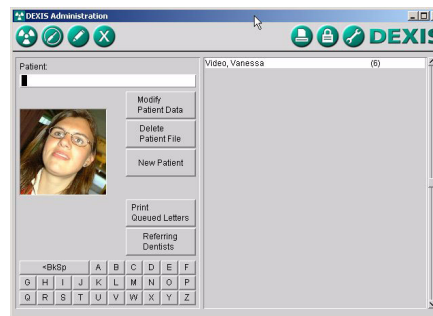
Make sure the digital camera is set to the model you use in Global Preferences or DEXimage Preferences. This may be a Twain compatible camera or a scanner. Choose your patient and open DEXimage. Connect your camera or scanner.

Click on the Camera icon to open your camera/scanner software. In the case of a digital camera, it will show you thumbnails for all images stored in the camera and you can select from them. When you close the scanner/camera software the selected images will be shown in “Picture Acquisition” box. Click on a picture. You may now Rotate or Crop the picture before choosing “Select” or dragging it to the DEXimage screen.

If a picture is to be placed onto the intra-oral screen, you will be prompted to assign a tooth number.

6.3.3 PATIENT PICTURE

You may acquire a patient’s picture on one of the paths as described above to be shown on the DEXIS Administration screen once the patient is selected. When in place, this picture becomes a helpful identifier and is also an image option in DEXwrite. To acquire a patient’s picture, click on the New Picture button on the patient’s Patient Data screen (from DEXIS Administration) to open the Picture Acquisition box.

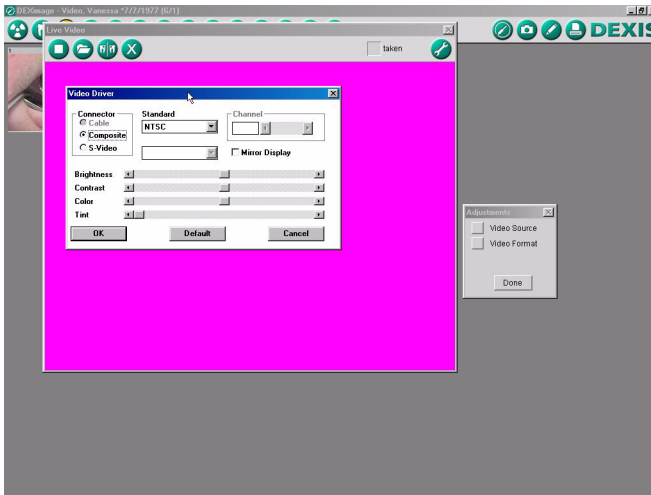


6.4 TAKING INTRA-ORAL VIDEO IMAGES

To capture images from Live Video with devices such as an intra-oral or microscopic camera, you must choose the setting for your video capture card. The choices appear in DEXimage Preferences. See “Video Hardware” on page 79. Verify that your camera is on, click again on the “wand’ icon or type “v” (for vid-



eo) on your keyboard to open the Live Video Image screen. The camera's live video will appear.



6.4.1 ADDITIONAL SETTINGS

If the live video does not appear or is of poor quality, click on the “wrench” icon in the upper right corner to open the adjustments screen of your video capture hardware. The options may vary depending on the capture card and its driver. Important settings are:

The Video Source needs to be set to the connector your camera is connected to, usually either “Composite” or “S-Video.”

The Video Standard needs to be set to the standard of the camera, usually NTSC in the US.

The Video Format should be set to “Full.” It needs to be reduced to “Half” if the full format causes speed issues or other problems.



6.4.2 CAPTURING IMAGES

Left-click on the “Stop” icon or anywhere outside the icons to freeze an image. Left-click again to return to live video. Once the image is satisfactory, click on the file icon or right-click anywhere outside the icons to save it.

You may also use the space bar to start and stop the video, the “T” key (for “take”) to save the image, or the arrow keys to scroll through the icons, hitting Enter to initiate their function.

The number of images saved to file will appear in a box in the upper right corner.

If your camera captures images flipped, use the Mirror icon (or press “m”) to correct. You may also flip the image when back on the DEXimage screen. Alternatively, you may change the default setting in DEXimage Preferences, see “Mirror” on page 80

Exit with the “X” icon or hit “q.” The captured images will appear on the DEXimage screen.

When capturing images on the intra-oral screen, you will be asked to choose tooth numbers for captured images.

If the capturing software is set to any of the “WDM” modes (e.g. WDM Fullscreen, see “Video Hardware” on page 79), the software continuously captures video frames while the live video is running. When you stop the live video, you may browse through the last 10 frames and select the best one by clicking the “previous” or “next” button.

Note: The frame browsing feature is only available when in WDM mode.



6.4.3 SIMULATION MODE

DEXimage has sample images within the program that can be captured, thus simulating the process of camera image capture. To capture the sample images, open DEXimage Preferences and Choose Simulation under Video Hardware, see “Video Hardware” on page 79.

Upon returning to the DEXimage screen, open the Live Video Image screen. Since there is no camera attached to your computer, you will not see any live video. However, as with live video, click on the file icon to “save” the simulated images.

Exit with the “X” icon. The simulated images will appear on the DEXimage screen.

6.4.4 FOOT PEDAL OR WAND CAPTURE

DEXimage supports foot pedals connected to the serial or game port. Presence of a foot pedal and the port number need to be set in DEXimage Preferences, see “Pedal” on page 80. Some intra-oral cameras have buttons to start, stop and capture images. Ask DEXIS tech support if these buttons are supported.

Foot pedal capture: Quickly step down once to freeze the video. Step down again to restart it. Having frozen the video, you can step down again and hold the pedal for about 1 second to save the image.

Wand capture (if supported): Press down on the capture button on the wand to freeze the video. Press it again to restart. Having frozen the video, double-click the capture button to save the image.

Quad feature

If your camera has a quad feature, please be aware that the four images will appear as one on the DEXimage screen. Since you may assign tooth numbers to images, we suggest that you turn off the quad feature.

6.5 IMAGE MANAGEMENT TOOLS

You may control all functions in the DEXIS software by mouse-click or keyboard, whatever is more convenient for you. The Tooltip bubbles will give a short description and keystroke of each item. There is a complete listing of keystrokes in “Keyboard Use and Shortcuts” on page 120.

Many of the functions in DEXimage are equivalent to the corresponding functions in the DEXray program. In these cases we will refer to their descriptions in the DEXray chapter.

6.5.1 SELECTION AND NAVIGATION

See DEXray, “Selection and Navigation” on page 50.

6.5.2 DEXIMAGE SCREEN ICONS

An icon will turn gold when initiated. For example, the “tooth” icon is highlighted when on the intra-oral screen. When a function icon is chosen or the appropriate key typed on the keyboard, the selected image will automatically enlarge and the function box will open next to the image. In addition, many icons will allow you to drag an image to them thereby opening their function. Click again on the icon or corresponding keystroke to terminate its function.

In addition, DEXIS will apply the current function to another image once you click on that image. There is no need to close the current function and image in order to begin working with a newly chosen image.

Please remember that the Tooltip is available for help. The corresponding keystroke will show in the help bubble.

DEXray icon

The DEXray icon leads to DEXray where X-ray images are captured, stored and managed. Click on the icon or type “X” (for X-ray) to initiate its function.



Intra-oral and Extra-oral icons

By clicking on the Intra-oral or “tooth” icon you switch to the intra-oral screen.

The Extra-oral or “head” icon leads to a patient’s extra-oral images screen. Click on this icon or “O” (for outside) to move to this screen.

If you drag an image to one of these icons, it will be moved to the appropriate screen.



Zoom icon

Use the Zoom Icon to magnify an area of an enlarged image. You may also type “Z” (for zoom) as seen in the Tooltip or drag an image to this icon to initiate its function. In DEXimage, magnified images fill the screen completely.

On the magnified image, the active function for the different areas is indicated by the mouse cursor: an arrow in the center where you can click and drag to change brightness/ contrast, and a magnifying glass at the edges where you can click to view different parts of the image.

Double-click on the body of the magnified image or hit Enter to return to standard enlargement.



Notes icon

This icon will allow you to attach text (notes, diagnoses or comments) to an image or to a selected area of the image. See DEXray “Notes icon” on page 54



Enhancement icon

Click on the Enhancement icon or type “E” to open the Image Enhancement box to adjust brightness, contrast and color of the selected image.

The top of the Enhancement dialog box shows a histogram of the selected image and a curve showing the current contrast and brightness setting. You may manipulate this line by clicking and dragging at the two crosses.

Use the sliding bars to increase the hue of the Color and the Saturation.

Automatic: DEXimage automatically sets the contrast and brightness

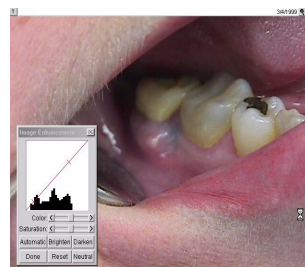
Brighten: Click multiple times to lighten the image.

Darken: Click multiple times to darken the image.

Reset: Use to reset the values and start again.

Neutral: Use to take the image back to the originally captured settings.

Click “Done” to save your changes.



Voice Notes icon

To attach a voice note to an image you must have a sound card and microphone attached to your computer. See DEXray “Voice Notes icon” on page 60.



Rotate icon

The image (standard and enlarged) may be rotated using the Rotate icon. You can also type “R” on your keyboard or drag the image to the icon to rotate it in 90-degree increments.



Mirror icon

Click the Mirror icon or type “M” on your keyboard to flip the image horizontally or “mirror” your image. Alternatively, you may drag an image to this icon to mirror it.



Home icon

The Home function is activated by clicking on the Home icon, by typing “B” (for back) on your keyboard or by dragging the image to the icon. See DEXray “Home Icon” on page 61.

**Archive icon**

The Archive icon allows access to the patient’s entire image history. See DEXray “Archive icon” on page 61.

**Quit icon**

Click on the Quit icon, type “Q” on your keyboard, click on the x in the upper right corner of the screen or hit the Esc key to leave the patient’s DEXimage screen.

**Wand icon**

Click on the Wand icon, or type “V” (for video) on your keyboard to open the Live Video Images screen in preparation for capturing images with an intra-oral or microscopic camera, see “Taking Intra-oral Video Images” on page 83.

**Camera icon**

Click on the Camera icon or type “C” on your keyboard to load images from your digital camera, see “Taking Digital Photographs” on page 82. You may also use this icon to open the scanner software to scan a picture into DEXimage.

**DEXwrite icon**

Click on the DEXwrite icon or type “W” on your keyboard to open the DEXwrite program, see “DEXwrite: Chairsides Report Generator” on page 97.

**DEXIS Logo icon**

Click on the DEXIS Logo icon or click “I” on your keyboard to obtain program information, the DEXimage Preferences button and these two additional features:



Help

Click on this button and your cursor gains a “?” Now, click on an item on the DEXimage screen and the manual will open in Acrobat Reader to the page that describes that item’s function.

DEXIS Web Site

Click on this button to open the DEXIS web site in your browser.

Click OK to close the Program Information screen.

6.5.3 COMMUNICATIONS: PRINTING FROM DEXIMAGE

Click on the Print icon, or type “P” on your keyboard to open the Windows Print Dialog. This dialog allows you to select a different printer and to access the printer settings. You may also open the Windows Print menu by dragging an image to the Print icon. From the Windows Print dialog, choose OK to open the DEXIS Print Dialog. See “Communications: Printing from DEXray” on page 69.

**6.5.4 COMMUNICATIONS: EXPORT**

Click on the Export icon or type “>” on your keyboard to open the Export Images screen. Alternatively, you may drag an image to the Export icon to open the Export Images screen. See DEXray “Communications: Export” on page 70.

**6.5.5 COMMUNICATIONS: IMPORT**

Click on the Import icon or type “<” on your keyboard to open the Import Images screen. See DEXray “Communications: Import” on page 73.



CHAPTER 7

DEXscan: Scanned Images

The DEXscan program is an important software application for scanning film- or paper-based X-ray and Photographic images.

DEXscan is an invaluable tool for incorporating historic images or images supplied from another source into either DEXray or DEXimage. Most commonly, it is used by offices wishing to convert their historic film-based patient X-rays (both intra-oral and extra-oral) into a digital format for comparison with later X-ray images.

A particularly special feature of DEXscan when scanning intra-oral X-rays is the ability to place many X-ray films on a flatbed scanner; the software will separate them automatically and will optionally assign tooth numbers based on the position of the film on the scanner.

7.1 SCANNING X-RAY FILMS

DEXscan owners may scan standard intra-oral and extra-oral films into DEXray. Once the film becomes a digital image, it is available for Image Management Tool functions. This includes the ability to print them instead of copying them with duplicating film and traditional processing with chemicals.

Although your scanned images will not have the same high resolution as images captured with your DEXIS sensor, they will be available for tool bar use.

Please note: Before attempting to scan, please verify that your scanner meets the DEXIS systems requirements, see “Hardware Requirements” on page 7. In addition, verify that your scanner’s software is installed, and test its function outside DEXIS. You must have a transparency adapter to scan X-ray film.



7.1.1 INTRA-ORAL WITH FLATBED SCANNER

Open a patient’s DEXray intra-oral screen. Open DEXray Preferences and choose your scanner software under “Scanner.” Click “Done.”

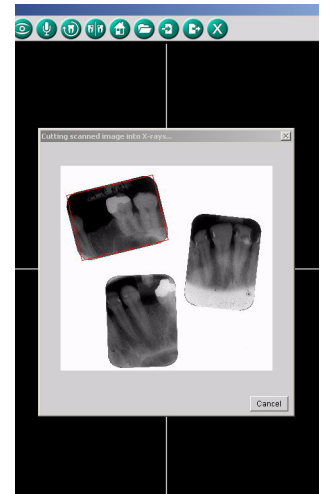
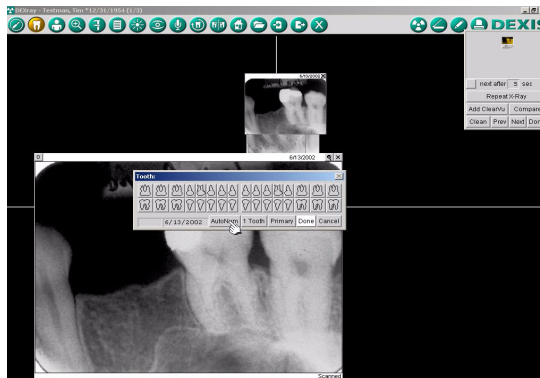
Remove the films from the mount, if applicable. Place the intra-oral films on the scanner bed bubble side down.

Leave a $\frac{1}{4}$ inch space between and around each film. DEXIS will “cut” around each film.

Click on the Scanner icon to open the scanner software.

When the scanner software opens, Choose the following settings: Transmissive, Grayscale or B/W photo, 300 DPI and 100%.

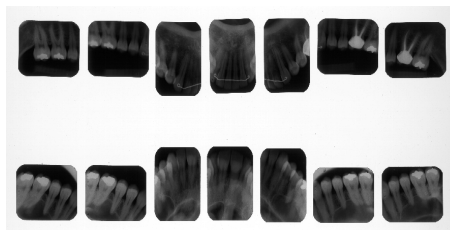
Click Preview to show the placement of the films on the scanner bed. Adjust the scan area, i.e., draw a box around the entire area to be scanned using click and drag. Again, allow $\frac{1}{4}$ inch around the outermost edges of the films. Click Scan to send the information to DEXray.



When the scan is complete, the scanning software will close. One at a time, each image will appear along with the Tooth box. Assign a tooth number or numbers and a date (the actual date the film was taken) to each image. Once you select a date for one image, that date will be proposed for all subsequent images of the same date.

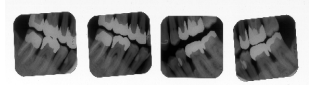
Automatic Assignment of Tooth Numbers

If you scan a series of X-rays (FMX or bitewing series), place the films on the scanner as you would like them to appear in mounted view on the screen. The rest position of the scanning bar should be at the top side or at the left side of the X-rays. Leave a $\frac{1}{4}$ inch space between and around each X-ray.



After having scanned the series and having cut out the individual images, the software will show the Tooth Number box. First, change the date, then click on “AutoNum”; the software will automatically assign tooth numbers based on the position of the film. If any tooth number is wrong due to inaccurate placement, you may correct that by enlarging the image, clicking on the tooth number and assigning the right one.

If you scanned several X-rays, all of the same tooth, you select the tooth in the Tooth Number box, then click on “1 Tooth” - the X-rays will all be assigned the same tooth number.



7.1.2 INTRA-ORAL WITH SINGLE-FILM SCANNER

If you want to use a single-film scanner to scan intra-oral X-rays one at a time you need to switch the automatic separation of X-rays off. Go to DEXray Preferences, select your scanner software under Scanner and then set Frame Removal to “1”, see “Frame Removal” on page 45

Open a patient’s DEXray intra-oral screen. Click on the Scanner icon to open the scanner software.

When the scanner software opens, choose the following settings: Transmissive, Grayscale or B/W photo, 300 DPI. Insert the X-ray film into the scanner and start the scanning process.

When the scan is complete, the scanning software will close. The image will become visible along with the Tooth box. Assign a tooth number or numbers and a date (the actual date the film was taken).

7.1.3 EXTRA-ORAL

Open a patient’s DEXray extra-oral screen. Open DEXray Preferences and choose your scanner software under Scanner. Click “Done.”

Click on the Scanner icon to open the scanner software.

When the scanner software opens, place the panoramic or cephalometric film face down on the scanner bed.

Choose the following settings: Transmissive, Grayscale or B/W photo, 150 DPI and 100%.

Click “Preview” to show the placement of the film on the scanner bed. Adjust the scan area, i.e., draw a box around the entire area to be scanned using click and drag. Click “Scan” to send the information to DEXray.

When the scan is complete, the scanner software will close. The film image will appear enlarged on the DEXray screen. Click on the number in the upper left corner to open the “Tooth” box. Assign a date to the image.

7.2 SCANNING A PHOTOGRAPH

There are two areas where scanned photos are applicable: Patient picture found in Patient Data and DEXimage.

7.2.1 SCAN A PHOTO INTO DEXIMAGE

Photos can be scanned into DEXimage and stored there with captured or imported pictures. Once the film becomes a digital image, it is available for Image Management Tool functions.

Please note: Before attempting to scan, please install your scanner’s software and test its function outside DEXIS, see “Installation Verification and Testing” on page 114.

Choose your patient and open DEXimage intra-oral or extra-oral screen, whichever is applicable. Now open DEXimage Preferences and choose your scanner software under Twain Camera; we are essentially using the scanner as a camera. Click “Done.”

Click on the Camera icon to open the scanner software.

When the scanner software opens, place the photo face down on the scanner bed. Choose the following settings: Reflective, true color, 300 DPI and 100%.

Click “Preview” to show the placement of the photo on the scanner bed. Adjust the scan area, i.e., draw a box around the part of the photo to be sent to DEXIS using click and drag. Click “Scan” to send the information to DEXIS.

When the scan is complete, the scanning software will close and a “Picture Acquisition” box will appear.



Click on the picture. You may now Rotate or Crop the picture before choosing Select or dragging it to the DEXimage screen. You may also Delete the picture and begin again.

If a picture is scanned into the intra-oral screen, assign a tooth number or numbers once it appears on the DEXimage screen.

7.3 SCANNING A PICTURE FOR PATIENT DATA

A patient's picture appears on the DEXIS Administration screen. Once in place, this picture becomes a helpful identifier and is also an image option in DEXwrite. You may scan a patient's picture into DEXIS without having any additional modules such as DEXwrite or DEXscan.

Please note: Before attempting to scan, please install your scanner's software and test its function outside DEXIS, see "Installation Verification and Testing" on page 114.

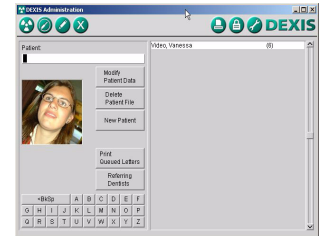
Open DEXIS Administration and click on the "wrench" icon to open Tools and Preferences. Choose your scanner software under Twain Camera; we are essentially using the scanner as a camera. Click "Done."

Click on the patient's name and then click on "Modify" to open the Patient Data screen. Click on the "New Picture" button to open the scanner software.

When the scanner software opens, place the photo face down on the scanner bed. Choose the following settings: Reflective, true color, 300 DPI and 100%.

Click "Preview" to show the placement of the photo on the scanner bed. Adjust the scan area, i.e., draw a box around the part of the photo to be sent to DEXIS using click and drag. Click "Scan" to send the information to DEXIS. When the scan is complete, the scanning software will close and a "Picture Acquisition" box will appear.

Click on the picture. You may now Rotate or Crop the picture before choosing Select or dragging it to DEXIS Administration. You may also "Delete" the picture and begin again.



7.4 SCANNING A SIGNATURE OR LOGO

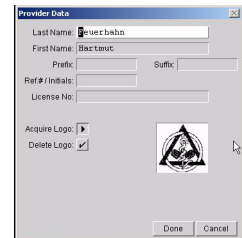
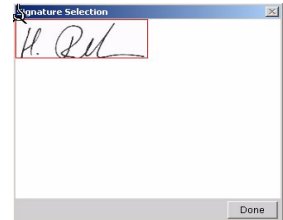
DEXwrite owners may scan signatures and logos into the system for use with DEXwrite letters.

Please note: Before attempting to scan, please install your scanner's software and test its function outside DEXIS, see "Installation Verification and Testing" on page 114

Open DEXIS Administration and click on the "wrench" icon to open Tools and Preferences. Choose your scanner software under Scanner. Then click on Signature or Logo. The Picture Acquisition box will open and will show you the signatures/logos scanned so far. Click on "New" to open the scanner software and place the original signature or logo face down on the scanner bed. Choose the following settings: Reflective, True Color or Grayscale (sometimes called B/W photo), 300 DPI and 100%.

Click "Preview" to show the placement of the signature/logo on the scanner bed. Adjust the scan area, i.e., draw a box around the part to be sent to DEXIS using click and drag. Click "Scan" to send the information to DEXIS. When the scan is complete, the scanning software will close and the new signature/logo will be added to the Picture Acquisition box. Click on the picture. You may now Rotate or Crop the image.

Logos can now be assigned to individual providers: Open the Provider Data by clicking on the "wrench" icon, then "Providers"; select a provider and click on Modify. Click on "Acquire Logo" to open the "Picture Acquisition" box which shows all scanned logos. Click on one, Rotate or Crop it if you wish, then click on Select to assign it to the provider. A logo assigned to provider #1 will become the default logo for all providers.



CHAPTER 8

DEXwrite: Chairside Report Generator

DEXwrite allows you to create reports, letters or any type of document directly from DEXIS. Items such as patient, practice and provider data merge into letters and reports automatically. DEXwrite is specifically designed to work in harmony with DEXray, DEXimage and DEXscan. You can create a marketing letter, insurance report, referral letter or any type of correspondence you may need during your day from either the operational or front office computers.

It is suggested that you review the material contained within the DEXwrite portion of the manual before beginning your first letter or report so that you can maximize your benefits and minimize frustrations.

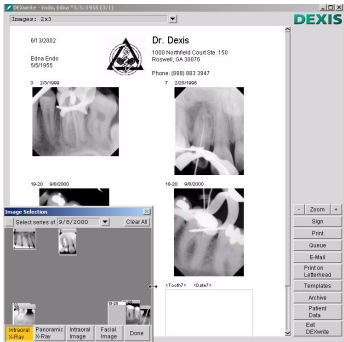
Once DEXwrite is installed (see “Software Installation” on page 11), you can start the program from the DEXIS Administration screen by first selecting the patient and then clicking on the DEXwrite icon. Alternatively, you may open DEXwrite from within DEXray or DEXimage either by clicking on the DEXwrite icon or by dragging an image onto the DEXwrite icon. In the latter case, the image will automatically be placed on the default report.



8.1 DEXWRITE SCREEN OVERVIEW

The patient information appears at the top of the screen. The Default Report is the one that is now visible; it appears each time DEXwrite is opened. The name of this Default Report appears below the patient information. There is a drop-down arrow to the right of it. When clicked, the report library appears.

There are function buttons to the right of the shown report and an Image Selection box to the left.



8.2 SETTING DEXWRITE PREFERENCES

Open DEXwrite Preferences by clicking on the DEXIS logo in the upper right corner of the DEXwrite screen, then click on Preferences.

Click on **Scan Signature** to scan signatures for use with the Sign function. See “Sign” on page 101.

Click on **Scan Logo** to scan a practice logo. See “Scanning a Signature or Logo” on page 95.

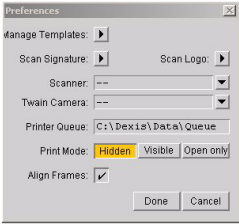
Choose the appropriate scanner software under **Scanner**.

Twain Camera refers to camera software choice.

Printer Queue refers to the folder where queued reports are held. The default queue location is a subfolder Queue in the DEXIS data folder (c:\dexis\data\queue). You may change this location to your desktop folder (usually C:\Windows\Desktop) or to the desktop of some other computer. If you do this, you will see the queued reports as icons on the desktop. You can then print them by dragging them onto a printer icon or delete them by dragging them to the recycle bin. Note: We suggest that you leave the default settings unless you are skilled in the use of Windows and with the creation of folders and icons.

Print Mode: DEXwrite prints reports by writing them to a PDF file and by launching Adobe Acrobat Reader. This program “reads and prints” DEXwrite reports.

Choose “Hidden” (the default setting) to hide Acrobat Reader entirely.



Choose “Visible” to have Acrobat Reader print the reports and at the same time show them on the screen.

Choose “Open Only” to view the report in the Acrobat Reader screen and print only from the Acrobat Reader screen. This selection gives you the most control but requires an additional step and slows down the printing process.

When the **Align Frames** box is checked frames will automatically be aligned when created or moved to a grid of 5 screen pixels in both directions. This makes it easier to obtain straight margins and to have pictures well aligned and of the same size.

Check **Print ClearVu** if you want DEXwrite to print all X-rays in ClearVu mode (sharpened) regardless of the settings for individual frames. This box is checked by default if printing in ClearVu mode is selected in DEXray.

Click Done to save any changes.

8.3 GENERATING YOUR FIRST DEXWRITE REPORT

Open a patient that has X-ray images in DEXray and click on the DEXwrite icon; the DEXwrite program will open.

In the Image Selection box double-click on the X-ray image to send it to the report. Click on the spots where you want to modify text and type in any changes. Click on the Print button to print the report.

You now have your first DEXwrite report!

8.4 REPORT MANAGEMENT TOOLS

There are two components to DEXwrite: Report Creation and Templates Construction.

Report Creation is accomplished using existing templates.

Templates Construction is the process by which you design templates that have specific components to meet your needs.

Each component has specific tools and functions.

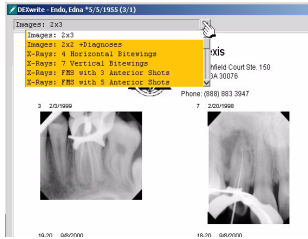
The following describes the tools and functions for Report Creation:

8.4.1 DEFAULT REPORT

The report that is visible upon opening DEXwrite is called the Default Report. You will notice that the report appears with the appropriate patient and practice data already merged. This default can be changed in Templates Management discussed later in this section of the manual. In the example, we have chosen the Prostho Interim Report as our Default Report.

8.4.2 REPORT LIBRARY

To select a different report, open the Report Library. Click on the down-arrow next to the name of the current report at the top of the window. This will open a list of letters and reports from which to choose.



8.4.3 FRAMES

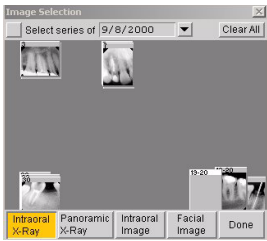
If you click in different areas of your report, you will notice that there are several sections to the report. Each section is housed in a box called a “frame.” Each frame contains specific data, such as text, logos and images. Once your basic Template is constructed you will probably not need to make changes when creating a report. The exception may be in the text in the body of the letter or report. To change this text, click on the area to be changed and add or delete text. The function and modification of frames is discussed in detail in the Templates Management section of the manual.

8.4.4 IMAGE SELECTION BOX

Most of the letters and reports that will be created with DEXwrite will include images of one sort or another. The Image selection box shows the visible images for this patient. That is, you will see all the X-rays as they were placed from the last time that patient’s file was accessed. Images should be enhanced prior to entering DEXwrite.

There are Selection buttons at the bottom of this screen. From here you are able to select images from one of the other integrated DEXIS modules.

For example, clicking on the Intra-oral Image button will open a screen that stores intra-oral camera images within that patient’s DEXimage record.



Note: DEXwrite only works with DEXray and DEXimage. You cannot add images captured with other image capture programs. You can, however, cut and paste and import and export images from other programs into DEXray and have DEX-image available for use in DEXwrite.

Click on the appropriate button to view and select Intra-oral X-ray images, Panoramic (along with cephalometric) X-ray images, intra-oral camera images and facial camera images.

To place a series of images into a letter or report, click on the down arrow to the right of the date to open the date menu. Choose the appropriate date and click on the check box to the left of “Select a series of:” All images for that date will move to the letter or report in one step.

To select individual images, click and drag the image to the letter or report or double-click on an image to move it to the next open image frame.

To move all images from the report back to the Image Selection box, click on the Clear All button on the upper right of the Image Selection box. To move an individual image, drag it from the report to the Image Selection box.

To minimize the Image Selection box, click “Done”.

8.4.5 FUNCTION BUTTONS

Function buttons are located on the right side of the Default Report.

Images

Appears when the Images Selection box is minimized. To re-open, click on the Images button.

Zoom

Enlarges the report for easy viewing. Use – and + to decrease and increase the size of the report.

Sign

Allows a scanned signature to be placed into a letter. Click on Sign to open the Signature Selection box. You may double-click on a signature to put it into a

predefined signature frame or you may drag a signature to the appropriate location.

Print

Print a report immediately.

Queue

Hold printing for later. An information box appears referring you to DEXIS Administration, “Print Queued Reports” where the choices are: “Print” to print a single selected report; “Print All” to print all reports in the Queue; “Delete” to delete a selected report from the Queue (it will remain in the Archive)

E-mail

Electronically send a letter. A new e-mail message box opens with the appropriate information automatically entered: the doctor’s e-mail address if it is in his or her Referrer Data screen; the sender’s information; the patient’s name and the letter as a .pdf (Portable Document Format) file — the recipient will need Adobe® Acrobat Reader® to open the letter. This is free software and can be downloaded from www.Adobe.com. Additional text may be added to your e-mail as with any other message.

Print on Letterhead

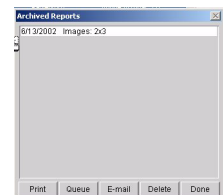
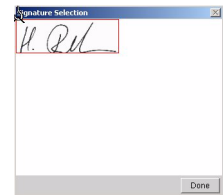
Hides the letterhead text and logo so that pre-printed stationery may be used. Choose Print or Queue to complete the process. Click on the Print on Letterhead button again to restore this text.

Templates

Opens the Templates Management screen, giving access to the templates for letters and reports.

Archive

Offers a report history for the patient. DEXwrite automatically stores reports in Archive. From this screen you may choose to Print, Queue, E-mail or Delete a stored report.



Text Blocks

Opens the list of “Text Block Categories”. You can add, modify, and delete text blocks and text block categories, see “Reusable Text Blocks” on page 103

Recipient

Opens the list of possible recipients, which is the same list as the list of referring dentists. You can add and delete names, modify recipient data, and select a recipient.

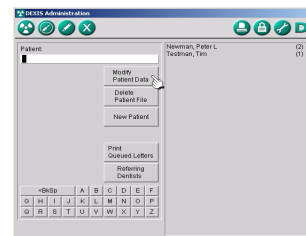
Patient Data

Allows access to the Patient’s Data screen through DEXIS Administration where immediate changes in information for the patient are accomplished, including the selection of Provider and Referring Dentist. Upon opening DEXwrite, this box will appear if any required information is missing.

Exit DEXwrite

Closes DEXwrite. After creating a report and upon exiting DEXwrite, you will be notified that the report has not been saved.

The report is saved only by choosing Print, Queue or E-mail.



8.4.6 REUSABLE TEXT BLOCKS

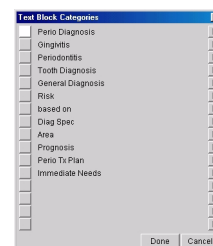
The concept of reusable text blocks, new in DEXIS 5, has been especially designed for those dentists, who want to generate reports well adapted to the individual case. It has been developed upon requests of periodontists.

DEXwrite comes with some predefined text blocks which can easily be adapted and extended as need arises.

Text Block Categories

Click on the “Text Blocks” function button to display the list of Text Block Categories. The report text refers to these categories through the Parameter mechanism, see “Parameters” on page 109.

Click on one of the buttons to the right to modify the name of the category. Click on a button to the right of an empty line to add a category. In both cases an input box opens, that allows you to enter or modify the name. For all your cate-



gories, choose brief, unique names; do not use names already used in the software, like “Patient”, “Practice”, or “Provider”.

Click on a button to the left to open the corresponding category displaying the list of text blocks belonging to it.

Click “Done” to save changes, click “Cancel” to close the dialog without saving changes.

List of Text Blocks

When you open a category, or when DEXwrite finds the name of a Text Block Category as a parameter in the report text, the list of text blocks belonging to the category is displayed.

The row of buttons at the top is used to define the type of text blocks listed:

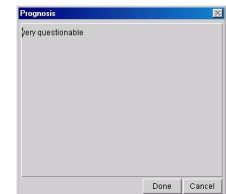
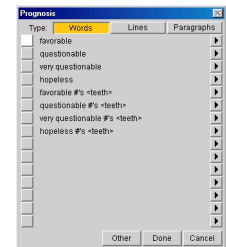
- “Words” means, the text blocks consist of single words or phrases. If several are selected they will be interconnected by commas.
- “Lines” means, each text block will be placed on an extra line
- “Paragraphs” means that the text blocks will be separated by empty lines if more than one text block is selected.

Below, the first few words of each text block is listed. If you click the buttons to the right of a text block the whole block is shown in an edit field and can be modified.

By clicking on the button to the left of a text block, the text block is selected for insertion into the text, replacing the parameter with the category name. Several text blocks can be selected; they will be interconnected according to the “Type” defined above.

Click on “Other” to open an input box and to enter a text block “on the fly”. This text block is entered into the text, but not permanently stored. You may select one or more text blocks and additionally enter one by clicking “Other”.

Click “Done” to save your selection, click “Cancel” to cancel it.



8.4.7 GENERATING DEXWRITE REPORTS

Now that you are familiar with the components of Report Creation, choose a patient and open DEXwrite. Follow these steps to create a report:

Choose a report from the Report Library

Select a recipient, if applicable

Select text blocks, if applicable

Place images into the report

Make text changes

Add a signature, if applicable

Choose to Print on Letterhead, if applicable

Print, Queue, or E-mail to complete the process

To make changes to the text of an archived report, open the patient's Archive, select the report, change the text as needed and choose Print, Queue, or E-mail to save the changed report. Upon returning to Archive, the new report appears with a pipe symbol indicating that it is a revision.

Remember: At this point you are in Report mode. Any changes made here will only affect the report you are currently preparing for this patient.

8.5 DESIGNING CUSTOM REPORT TEMPLATES

The following describes the tools and functions for Template Construction:

Throughout this section of the manual we will use the term Template to signify the basic template for a report or letter that has a specific layout and general predefined text; the actual text and graphics are not yet inserted. Templates are the basis for creating Reports. These reports are completed when you add your own text, pictures and patient's X-rays.

Please Note: We suggest that you have one person in charge of Templates Management to avoid erroneous modification of Templates.

8.5.1 COMPONENTS OF THE TEMPLATES MANAGEMENT SCREEN

Click on the Templates button to open Templates management for this overview:



Paper Format

Select the size and shape of the final letter or report. The selected size should be equal to the size of the paper used. Please be sure that your printer supports the format you choose.

Insert Parameter

Offers a list of items to merge such as practice, referrer, image, patient and provider information. If you select an information item from this list, it will be inserted into the text at the current cursor position, see “Parameters” on page 109.

List of Templates

DEXwrite contains a long list of predefined templates to fulfill the requirements of different types of practices. You may choose the templates that work for your practice and have them become your Report Library, see “Report Library” on page 100.

Save

Choose after modifying a Template to save the changes.

Save As

Choose to give the modified version a new name thereby maintaining the original Template and creating a new one with the modified contents.

Delete

Deletes the selected Template entirely.

Done

Close Templates Management

8.5.2 SELECTING THE TEMPLATES FOR YOUR PERSONAL REPORT LIBRARY

Open the Templates Management screen to select the templates to be contained in your personal Report Library. Scroll down the list of templates and locate the “End of Listed Templates” line. To choose a template for your Report

Library, drag it above the “End of Listed Templates” line. To remove a template from your Report Library, drag it below the “End of Listed Templates” line.

By dragging a Template to the top-most position, it will become your Default Report and will be shown whenever you launch DEXwrite. For example, an Endodontist may choose to have Endo Post Treatment Report as the default report for the practice.

When you have completed arranging, adding and subtracting report templates to your Report Library, click “Done” to exit the Templates Management screen.



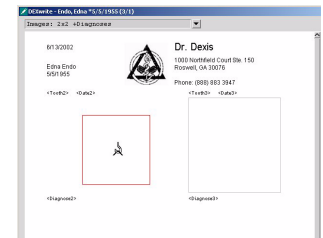
8.5.3 COMPONENTS OF A TEMPLATE

Before initiating any changes, let’s examine the components of a Template.

Frames

Click on different areas of the Template. You will notice red “boxes.” These boxes are called Frames. Every report is comprised of frames. Each frame is filled with text or images.

Using ‘right-click and drag’, you may move frames. Image frames may also be moved by left-clicking and dragging; in text frames, the left mouse button is used to move the text cursor and to mark text. Click and drag on the borders to resize frames.



To create a new frame, draw a box on the Template using click and drag.

Frames Properties Screen

When you create a new frame or double-click on an existing one, the Frame Properties screen will appear. This screen provides the tools you need to select which type of item the frame is to contain and to specify the properties of the frame.

The following types of frames are designed to contain certain types of information such as:

Text: contains text only. You can specify the following additional properties:

- Text Color: select from the available colors

- **Font:** select from the built-in fonts: Helvetica (serife-less font with variable width characters), Times Roman (variable width characters with serifes), Courier (typewriter style font - fixed width characters with serifes).
- **Fontsize in points**
- **Bold and/or Italic**

Intra-oral X-Ray: is for containing a picture, preferably an intra-oral X-ray. You can drag any picture into frames of this type, but only intraoral X-rays will be placed here by double-clicking on the image in the periapical Image Acquisition screen. You can also specify a tooth number or tooth number range. If you do this, the X-rays will be positioned automatically into the correct frames whenever you double-click on that particular X-ray when printing full mouth series or bitewing series templates. You can also specify whether the images placed into this type of frame will be printed Colorized or in ClearVU mode.

Panoramic X-ray: is for containing a picture, preferably a panoramic X-ray. You can drag any picture onto frames of this type, but only panoramic X-rays will be placed here by double-clicking. You can specify that pictures placed into frames of this type are to be printed Colorized or in Clear-VU mode.

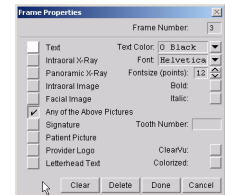
Intra-oral Image: is for containing a picture, preferably an intra-oral video image. You can drag any picture into frames of this type, but only intra-oral video images will be placed here by double-clicking.

Facial Image: is for containing a picture, preferably a facial photo or one stored in the Extra-oral Screen of DEXimage. You can drag any picture onto frames of this type, but only facial photos will be placed here by double-clicking.

Any of the Above Pictures: is for containing a picture. Any of the aforementioned pictures can be placed here by dragging or double-clicking. If you are unsure of the type of image to be placed into a frame, then select Any of the Above Pictures. In that way, double-clicking on any image will automatically place it in the next free frame.

Signature: is for containing a provider signature only. It will be filled by the Sign function.

Patient Picture: is for containing a Patient Picture. It will be filled automatically if a patient picture is available for the current patient. Patient Pictures are captured on the Patient Data screen using a scanner or digital camera as discussed previously.



Provider Logo: is for containing the Practice logo or Provider logo. This frame will be filled automatically if a practice logo or provider logo is available. It will not be printed if Print on Letterhead is selected.

Letterhead Text: is for containing text only. It will be printed only if Print on Letterhead is not selected. You can specify the font size in points as before.

Click on Clear to clear the contents of a Frame for this Template. Empty Frames do not appear on printed reports. Click on Delete to remove the frame entirely. Done closes and saves changes, Cancel cancels changes.

8.5.4 PARAMETERS

Parameters are “placeholders” for data-related text, which are filled in automatically by the computer. They are enclosed in angle brackets (“<” and “>”). Since the computer must “understand” the nature of these parameters to know what text to place, the parameters must be spelled exactly as they are in the Parameters list. Therefore, we strongly suggest that you insert parameters by selecting them from the list rather than typing them in manually.

It is in text frames that information is merged using Parameters. These Parameters or merge items draw on information previously entered in DEXIS; therefore, you may need to edit information after an initial printing. Examples:

Data Related Parameters

Practice in parameters is a placeholder for the practice name in Component Licensing.

Prx (practice) address Line 1,2,3, and 4 in parameters relates to the Address Text in DEXray Preferences.

Referrer information in parameters relates to data of the patient’s “Referring Dentist”, selected in Patient Administration. The referrer data is entered and modified on the Referrers Data screen.

Recipient information in parameters relates to data of the report recipient, if that is not the referring dentist. If the software encounters a recipient parameter in the report it displays the list of recipients and allows to select from it.

Patient information in parameters relates to information on the individual’s Patient Data screen.

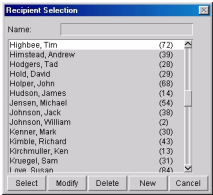
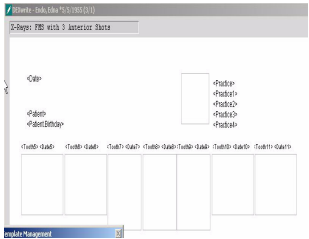


Image Related Parameters

Pay particular attention to the “Image...” choices in parameters. These parameters link image information from a particular frame to text in another frame. The choices are:

Image Date (the date an image was taken)

Image Diagnosis (any note attached to the image)

Image Tooth # (the tooth number(s) attached to the image).

These parameters can be filled in only after a picture is selected. The parameters entered into the text when one of these menu points is chosen, all end in an underscore (“_”). If you leave the parameter as it is, the information will be taken from the first picture selected into a frame. If you want to refer to the picture in a specific frame, you have to replace the underscore by the Frame Number of the frame that is to receive the picture. The frame number is shown in the Frame Properties dialog. You can determine the frame number by double-clicking on that frame.

An example: You want to include the tooth number of an attached X-ray into your text. The X-ray is to be placed into frame number 7. If this is the only X-ray on the report, or if you do not mind which one is used to deliver the information, you put <tooth_> into the report or simply select “Image Tooth”. You can get the software to enter the tooth number from this specific frame 7 into your text by entering <tooth7> or by selecting “Image Tooth” from the list and by replacing the underscore with a “7.” In this manner you are associating the image in the Image Frame with the tooth number presented in the text of the report.

Text Block Categories

The Text Block Categories delivered with the system or added by you are also listed in the Parameters menu. If you select one of them or enter it into the text, enclosed in “<” and “>”, the software will show the selection menu for this Text Block Category allowing to enter one or more of the text blocks of this category into the text.

An example: You want to define a place in the report where one or more of the predefined diagnoses is to occur. You have a Text Block Category “Diagnoses”, with several text blocks to select from. If you put <Diagnoses> into your text, or

have the computer do that by selecting “Diagnoses” from the Parameter Menu, the list of diagnoses will be displayed when the report is generated. You select the applicable ones, and they will be inserted into the text replacing the place holder.

For more on Text Blocks, see “Reusable Text Blocks” on page 103.

Input Fields

Any parameter that could not yet be replaced when the report is to be printed, queued for printing, or e-mailed, causes an input window to be opened allowing you to enter text to replace the place holder.

An example: The report text contains <Remark>. Since <Remark> is neither a known parameter (like <Practice> or <Patient>) nor a Text Block Category, an input window is shown when you select to print the report, asking for the remark. It shows “<Remark>” in the title bar.

8.5.5 SAVING THE TEMPLATE

After making changes to a Template, choose Save to make permanent changes to this particular Template, or choose Save As to give the modified Template a new name and therefore keep both the original and the new template. Choose Delete to remove the Template entirely. Remember, these are permanent changes.

If you try to exit without choosing any of these options, a warning will appear asking for a choice to save or not to save. This is a safeguard against losing changes made to Templates.

8.5.6 CONSTRUCTING YOUR OWN TEMPLATE

The changes described in Templates Construction can be accomplished on individual reports outside of Templates Management; however, the changes will then take effect only for that current report and not for any subsequent report using the same template. It is only in Templates Management that permanent changes to Templates can be accomplished.

We suggest that you first become familiar with the letters and reports included with DEXwrite before attempting to alter existing templates or to create your own.

Select a Template to modify: We suggest that you construct your own template by selecting one that is similar, saving a copy under a new name, then starting from there.

Click on Templates to open Templates Management, select a suitable template from the list and click on it. Click on “Save as...” giving it a meaningful name. This way, the original will not be altered. Close and re-open Templates Management and choose the new Template. As with all newly constructed Templates, it will be at the end of the list. You might want to drag it up closer to the top.

Change text: Click on a text frame (the frame will turn red). The cursor will appear in the text box and can be moved by either clicking elsewhere in the box or by moving it with the arrow keys. Once the cursor is located in the proper position you can type additional text or delete text using the keyboard, much like you would with a traditional word processor.

Insert text parameters: Parameters are fields with specific names that will later be filled in with values by the computer. Parameters in DEXwrite are enclosed in brackets (“{” and “}”), see “Parameters” on page 109. To insert a DEXwrite parameter, you move the cursor to the spot where you wish to insert it, then select the

parameter from the list in the Forms Management dialog by clicking with the left mouse button. You open the Parameters List by clicking with the left mouse button on the down arrow adjacent to the Insert Parameter’s Box.

Resize a frame: move the cursor over an edge or corner of the frame, press the left or right mouse button and drag the border while holding the mouse button down.

Move a frame: move the cursor over the frame, press the right mouse button (cursor will turn into a hook) and drag the frame to the position you want.

Create a new frame: move the mouse over an empty space of the report, press the left or right mouse button and drag open a rectangle. When you release the button, a Frames Properties Screen will come up which allows you to select the type of frame this will be, see “Frames” on page 100. The dialog also allows you

to specify the text properties, like size, font, and color, and to specify special picture modes (ClearVU, Colorized).

Modify the frame type: double-click with the right mouse button on the frame to bring up the Frames Properties Screen. You can then change the frame type. The screen also allows you to change the text size and to specify special picture modes (ClearVU, Colorized).

Delete a frame: double-click with the right mouse button on the frame to bring up the Frame Properties Screen, click on “Delete”, then “Done”.

Change the paper format for the template: select the appropriate format from the list at the top of the Forms Management Screen. Please be sure that your printer supports the format you choose. Not all printers support all formats.

APPENDIX A

Hardware and Testing

A.1 RECOMMENDED HARDWARE SPECIFICATIONS

Our current hardware system requirements are available on our website, from your representative and from our Customer Care Center. As technology changes, our requirements will be updated to reflect such changes. Please consult current DEXIS systems requirements before purchasing any hardware.

A.2 INSTALLATION VERIFICATION AND TESTING

This section allows for the verification and testing of your DEXIS software, DEXIS hardware and other hardware accessed by the DEXIS software.

Please verify your software installation, test the DEXIS sensor and print functions. Then test additional hardware only as it applies to your particular practice and purchased modules.

If your verification and testing do not produce the desired results, please contact Technical Support for assistance.

Verify the installation of DEXIS software modules

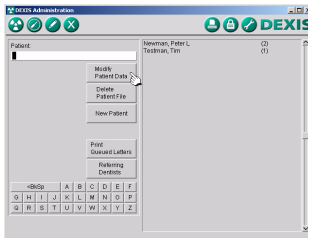
Double-click on the DEXIS icon from your desktop to open DEXIS Administration. If all modules are installed properly you will see four icons on the upper left of the screen: DEXray, DEXimage, DEXwrite and Quit.

If you have not purchased DEXimage or DEXwrite, you may elect not to install them. In that case, these icons will not be visible.

Please reinstall the software of all purchased modules if their corresponding icons are not visible, see “Software Installation” on page 11.

Verify by returning to DEXIS Administration.

If the appropriate icons still do not appear, call Technical Support for assistance.



Verify the installation of Acrobat Reader

Go to Start, then Programs. Acrobat Reader will appear on your Programs list. If not, re-install Acrobat Reader, see “Software Installation” on page 11. Verify by returning to Start, Programs.

If Acrobat Reader still does not appear, call Technical Support for assistance.

Acrobat reader needs to be installed to take advantage of the new on-screen help feature and other DEXIS documents.

Verify the installation of the Sensor drivers

Your sensor serial numbers are visible from the Intra-oral X-ray Capture screen in DEXray.

Open the DEXIS Administration screen. Double-click on any patient’s name to open the DEXray screen. You will receive a disclaimer. Read the disclaimer and choose “I Accept” or “Do not tell me anymore” to close it.

Type “x” on your keyboard. This will open the Intra-oral X-ray Capture screen (appears as a tooth chart).

Your sensor serial numbers should appear in the lower left corner of the Intra-oral X-ray Capture screen along with a box labeled “Other Sensor.” If no numbers appear, re-install the Sensor Disk(s), see “Installing the Sensor Disk” on page 15.

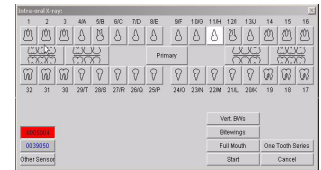
After re-installing, return to this screen to verify installation. If on a network, verify that the sensor number(s) appear on each workstation where X-rays will be taken.

If the sensor numbers still do not appear, call Technical Support for assistance.

Test X-ray image capture with your DEXIS sensor

If separated, connect the sensor to the board aligning the red dots on both parts.

Insert the sensor/board into the PC Card slot, Caution – there are 2 slots; keep the board level, in one slot or the other. You may hear 2 beeps as the computer recognizes your sensor. The first time the board is inserted, Windows will recognize the new hardware and will install the appropriate drivers. Please wait until this procedure is complete.



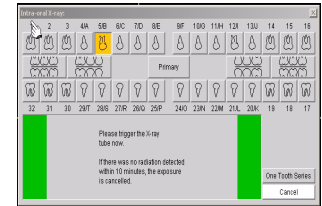
Open the test patient's DEXray screen.

Type "x" on your keyboard. This will open the Intra-oral X-ray Capture screen (appears as a tooth chart).

Click on the serial number of the sensor you are using. Click on a tooth number. You will be asked to "Trigger the X-ray tube...."

Take an image: Place the flat part of the sensor toward the tube and place a coin between the two. Expose with radiation.

If you are unable to capture an image, your image does not appear or you have images that do not resemble the X-rayed item, please call Technical Support for assistance.



Test Print functions

If you are using a new printer, follow the manufacturer's guide for installation and print a test page before entering DEXIS.

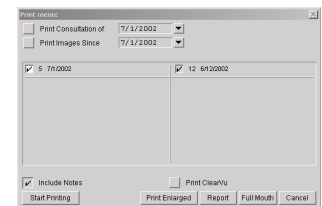
Please verify that your printer functions outside DEXIS.

For use with a non-networked laptop: shut down the laptop, attach the printer and restart the laptop.

If you are using an established network printer, or once you have printed a test page with a new printer, proceed to the test patient's X-ray screen.

Print from DEXray

Click on the print icon on the upper right to open the Windows Print screen. Click on OK to open the DEXIS Print Menu screen. Click on your actual test image or click on the selection box listed in the center of the Print Menu screen. Then, click on Start Printing. The image will print. For network systems, print from DEXray on each workstation where the printer is accessible.



If the image does not print, call Technical Support for assistance.

Print from DEXwrite

If you have purchased DEXwrite, check for its print function. From the test patient's X-ray screen, click on the DEXwrite pencil icon on the upper right and click on the "Print" button on the right side of the report. The report will print. For network systems, print from DEXwrite on each workstation.

If the report does not print, call Tech Support for assistance.

Test Intra-oral Camera with DEXimage

Connect the proper cable from the intra-oral camera or microscopic camera to the computer. Call the camera's technical support for recommendations for the purchase for "S-Video" or "composite (RCA)" connection. Once the camera is connected and turns on, enter DEXimage.

From the test patient's DEXray screen, open DEXimage using the "wand" icon on the upper left. Click on the DEXIS logo icon, then Preferences to open DEXimage Preferences.

Choose WDM Full Screen.

If you will be using a foot pedal or wand capture device, choose 1 (or correct number of your specific computer's COM port) under Pedal at COM.

Click Done to save your selections.

Click on the wand icon on the upper right of the toolbar to start the Live Video Images screen.

If there is no live video, click on the "wrench" icon. Dependent on the capture card used and its drivers, you will see different popup dialogs where you can set video formats, standards, and connectors.

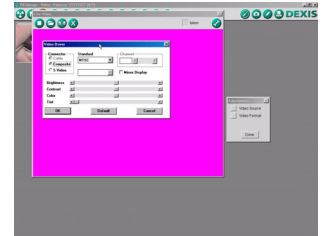
Choose "S-Video" or "Composite" as it applies to your type of connection from the camera to the computer, and "NTSC" under "Standard." Under Video Format, choose "16 bit RGB."

These are the most common settings for intra-oral cameras in DEXimage. Other settings may be necessary depending on the installed capture card.

If live video still does not appear, call Tech Support for assistance in choosing the proper settings.

Once live video appears on the screen, click on the "file" icon to capture, and then "X." Your image will then appear on the DEXimage screen. (If you are on the intra-oral screen, you will be asked to assign a tooth number to the image)

If your captured image did not move onto the DEXimage screen, call Technical Support for assistance.



Test your DEXIS-provided foot pedal

Once on the Live Video Images screen, tap the pedal quickly to freeze the image; holding the pedal down longer will capture the image.

If you are unable to capture an image with your foot pedal, call Technical Support for assistance.

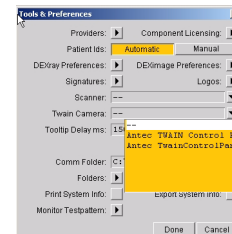
Test your Digital Camera

DEXIS owners may capture from the Patient Data screen under New Picture. Please verify that your camera functions outside DEXIS.

Patient pictures into Patient Data

You may use your digital camera to capture patient pictures, which will appear on the DEXIS Administration screen.

Set the type of digital camera used by opening the DEXIS Administration Tools and Preferences by clicking on the Wrench icon. If you use a Twain compatible camera, select it under Digital Camera. If you use a memory card, select “—” instead consult your camera manual to find out which type your camera uses.



Memory card/PC card adapter use

If no images appear in the Picture Acquisition box, consult the directions for your camera and make necessary changes. If images still do not appear, call Technical Support for assistance, see also “Memory Card with Card Reader” on page 82.

Camera with Twain interface

If your installed camera software does not open through DEXIS or you are unable to acquire an image, call Technical Support for assistance, see also “Twain Interface” on page 83.

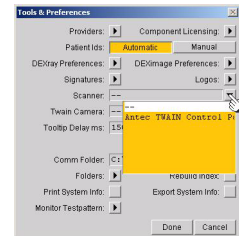
Test your scanner

DEXscan owners may scan standard film (intra-oral or extra-oral) into DEXray. Please verify that your scanner functions outside DEXIS.

Scan X-ray film into DEXray

Select the scanner to use in DEXIS Administration Preferences. Open DEXray for your test patient and select the extra-oral screen. Click on the scanner icon to open the scanner software. Scan a grayscale image (B/W photo), see “Scanning X-Ray Films” on page 91.

If your scanner software does not open or your image does not appear, consult the directions for your scanner and make necessary changes. If an image still does not appear, call Technical Support for assistance.



Test your E-mail function

If you have Internet service and have a MAPI-compliant e-mail program such as Outlook Express, you may use the DEXIS e-mail feature.

To test your e-mail function, proceed to the test patient’s DEXray intra-oral X-ray screen where images appear. Click on the Export icon to open the Export images screen. Click on “E-mail,” then click on your actual test image or click on the small selection box in the center of the Export screen. Click on Export Images and then click Done.

Your e-mail program’s New Message screen will appear with the X-ray image as an attachment.

If your e-mail program’s New Message screen does not open, call Technical Support for assistance in choosing the appropriate settings.

APPENDIX B

Keyboard Use and Shortcuts

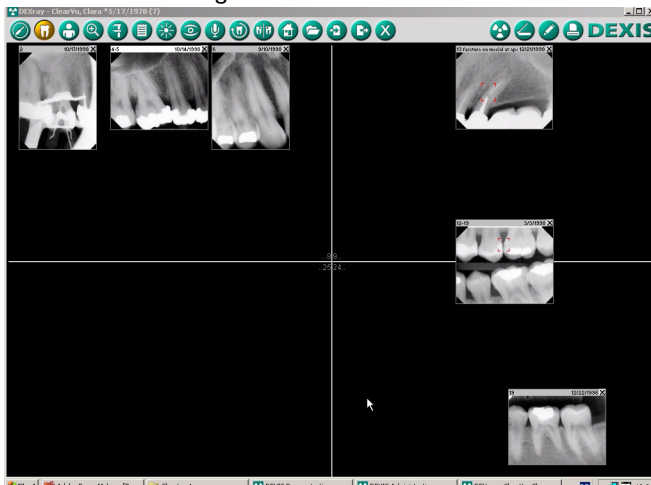
For those who feel more comfortable using the computer keyboard to move around the program, DEXIS provides a variety of key combinations to make this possible.

In Focus/Appropriate Key

Before listing the actual keystrokes, it is important to understand that at any given time, there is one item on the screen that is highlighted or “in focus”; and that only the item “in focus” receives the keystrokes.

Examples:

If an X-ray is highlighted (in focus), hitting the “R” (the appropriate key) on your keyboard will cause the image to rotate.



In the Intra-oral X-ray Capture screen, if a tooth on the chart is highlighted (in focus), hitting the Enter key will set that tooth up for X-ray.

Upon changing to History mode on the Visible Images screen, when Done is highlighted (in focus) hitting the Enter key will change the X-ray screen from Mouth view to History view.

The Arrow Keys

The arrow keys move the focus from item to item on that particular screen. Depending on the type of item (X-ray image, text etc.) that is in focus, different results may occur. We strongly suggest that you take the time to work with the keystroke combinations in order to better understand their utilization.

The arrow keys on the keyboard will most often move you from one X-ray image to another. If there is more than one X-ray on the screen, try hitting the arrow keys to move from image to image. The right and left keys move right and left; the up and down keys similarly move up and down. The image that is highlighted with a white border at the top is the item in focus at that time. If a magnified image is on the screen, the arrow keys will change brightness and contrast, since only that image is “in focus.”

The Arrow Keys have a special function when used in:

Measurement: They move the marker (the small circle located on the image) within the image to assist in placing the marker at the appropriate measurement point, see “Measurement icon” on page 63. The red marker will only appear after you activate the Canal feature to indicate your intention to measure the root canal.

Zoom: The arrow keys move the magnifying glass. Hitting the Enter key displays that portion of the image.

Accessing the DEXray icons

From the DEXray screen, hit one of the following keys to access the corresponding icon and its function:

v DEXimage opens

a Access Intra-oral X-ray Screen

o Panoramic Screen opens

z Zoom (Magnification) magnifies the image in focus

m Measurement begins the measurement of the image in focus

t Text Box opens for the image in focus
e Enhancements open for the image in focus
u ClearVu the image in focus
s Sound recording opens for the image in focus
r Rotate the image in focus
b Reset or take back the image in focus to original settings
h Archive or history opens
< Import Images screen opens
> Export Images screen opens
q Quit DEXray
x Take an X-ray image
c Scanner software opens
w DEXwrite opens
p Print
i Information Screen opens , then on to Preferences

Accessing the DEXimage icons

From the DEXimage screen, hit one of the following keys to access the corresponding icon and its function:

x DEXray screen opens
a Access Intra-oral Images Screen
o Facial Images Screen opens
z Zoom (Magnification) magnifies the image in focus
t Text Box opens the for the image in focus
e Enhancements open for the image in focus
s Sound recording opens for the image in focus
r Rotate the image in focus
m Mirror the image in focus

b Reset or take back the image in focus to original settings

h Archive or history opens

⌵ Import Images screen opens

⌶ Export Images screen opens

q quit DEXimage

v live Video capture

c Digital camera or Scanner capture

w DEXwrite opens

p Print

i Information Screen opens , then on to Preferences

Text Fields

When it is necessary to issue a command while a text field is in focus (a box where text is typed in to add information), hold the “Alt” key while pressing the command key at the same time. The arrow keys move within the text field until the last character when the cursor will move to the next neighboring element.

Other Keystroke Tools

Enter

When a button is highlighted or in focus, hitting the Enter key is the equivalent of pressing that button, thus starting the function of that button or toggling its state.

When an image is highlighted or “in focus”, hitting the Enter key will automatically enlarge the image. Hitting the Enter key a second time will return the image to its standard size. If the image is magnified, hitting Enter will return the image to standard enlargement.

Delete

If an image is enlarged, hitting the Delete key will return the image to its standard size. Hitting the Delete key when the image is in its original size will delete the image. NOTE: DEXIS will ask for confirmation before deleting any image.

Escape

Hitting the Escape key will close a function box such as Measurement or Enhancements. It can also be used to close the program.

Spacebar

Hitting the spacebar will pause a function, such as the scroll feature in navigator or the playback of a voice note

F1 Key

If you hit the F1 key while a button or icon is in focus, the Tooltip of this button will be shown.

F2 Key

When an item with a drop-down box is in focus, hitting the F2 key will open the drop-down box. You may then use the arrow keys to move through the box.

F3 Key

When hitting the F3 key, the focus will be moved to the leftmost icon in the toolbar.

APPENDIX C

Screen and Window Adjustments

You may view the DEXray and DEXimage screens in a variety of sizes, positions and even in multiples.

Sizing and positioning

As with any Windows box, the size of the DEXray and DEXimage screens may be changed.

To change the size of a screen, put your cursor on the outside edge or corner of the screen until the double arrows appear. Click and drag the screen to the desired size. You may drag it to any position on the screen by clicking and dragging on the title bar.

To maximize for use, click on the Maximize button in the upper right corner of the screen. To return this screen to the last size, click on the Restore button also in the upper right corner.

Of course, you may minimize the screen, sending it to the task bar by clicking on the Minimize button located in the same area. Click on the corresponding tab on the task bar to restore to the last size.

Screen size changes are remembered in the DEXIS system. When the screen is changed to this size, closed and reopened for the same or another patient, it appears in the same size as when last opened.

Multiple Screens

You may view multiple or split screens for the same patient. If you do not utilize a link to practice management software, you will be able to view multiple or split screen for different patients.

To open multiple screens for the same patient, open a DEXray Intra-oral screen. Size the screen any size smaller than its maximized size. Click on the Extra-oral screen icon. Now both screens appear and are sized proportionately.

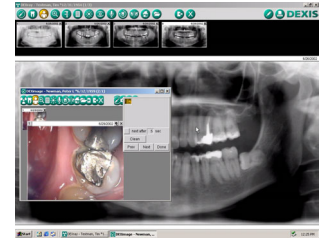


Next, click on the DEXimage icon from one of these screens. Then, from the newly opened DEXimage screen, click on the Intra-oral (or Extra-oral) icon. Now, all the patient's screens appear.

To show multiple screens for different patients, open one patient's screen. Click on the DEXIS Administration tab on the task bar. Highlight a different patient, and click on either the DEXray or DEXimage icon, as desired. This will open an additional screen for the newly selected patient. You can choose intra-oral or extra oral as needed until the desired screens (both intra-oral and extra-oral DEXray and DEXimage screens) appear. Again, always maximize each screen for use and close when done.

You may have many screens open at once; however, only four screens are visible at once. Should you have more than four open, the excess screens will overlay the original four; therefore, we suggest that you open a maximum of four screens at one time.

Remember, since DEXIS remembers screen size changes, if you do not maximize before closing, the next time the screen is opened for this or any other patient it will be the size it was when last opened.



APPENDIX D

Interfaces, Bridges, and Links

D.1 DEXPAN

DEXpan is the link between digital panoramic software and DEXIS. It allows for the transfer of a digital panoramic/cephalometric X-ray image from the digital panoramic software to the DEXray extra-oral screen. Once on the screen, it can be stored in DEXray along with the patient's intra-oral X-rays. It is available for use by the Image Management Tools.

To operate this program, you must have an authorized digital extra-oral (panoramic) system whose software is recognized by DEXIS. Please contact Technical Support or your representative for information on specific product recommendations.

DEXIS recognizes two types of interfaces: Panoramic digital sensor that is attached to a panoramic X-ray unit and a phosphor plate scanner. Both systems take the place of standard film. In the latter, you have the ability to use panoramic and cephalometric plates if your unit accepts these.

Once your digital extra-oral hardware (digital sensor on panoramic X-ray unit or phosphor plate reader) and panoramic capture software are installed, the DEXpan program can be activated.

To start the process of obtaining a digital image, open the patient's DEXray extra-oral screen.

Digital Sensor

Place the patient into the panoramic unit. To capture the image, click on the X-ray capture icon or type "X" on your keyboard to open the panoramic capture software and expose the digital sensor as you would standard film.

Once complete, the image appears in the panoramic X-ray capture screen. Close this screen to move the image into the DEXray extra-oral screen.

Phosphor plate-to-digital system

Start by loading the plate into the cassette and mounting the cassette on your panoramic unit. Place the patient into the panoramic unit and take your image as you would with traditional film.

Once the exposure is complete, remove the plate from the cassette and load into the dedicated reader according to the manufacturer's instructions.

Click on the X-ray capture icon or click "X" on your keyboard to open the panoramic capture software. Choose plate size and click the start (SCAN) button.

Once complete, the image appears in the panoramic capture screen. Once this screen is closed, the image moves to the DEXray extra-oral screen.

D.2 DEXIS TO DENTRIX LINK

Installation of the DEXIS-to-Dentrix link should not be attempted without assistance from Technical Support.

All patients are entered and chosen through Dentrix. If you enter patients directly in DEXIS Administration, images taken for that patient will not be visible when the link is established at a later time.

Once the DEXIS-to-Dentrix link is installed and verified, you will have both the DEXray and the DEXimage (if installed) icons on your desktop. For ease of use, please drag these icons from the desktop to the quick launch bar. If DEXimage is one of your purchased modules, drag both the DEXray and the DEXimage icons to your quick launch bar. If not, drag only the DEXray icon to the quick launch bar.

Open DEXray or DEXimage from Dentrix

To start the link, open Dentrix. Select a Dentrix screen, such as the chart feature.

Next, choose a patient. Please verify that you have indeed selected a patient before moving to the next step.

Now, click once on the DEXray or DEXimage icon on your launch bar. This will open the DEXray/DEXimage screen for the patient chosen in Dentrix.

Once the DEXray/DEXimage screen opens you may size, maximize for use, minimize and reposition it as with any screen in Windows.

To size and position the DEXray/DEXimage screen anywhere on the Dentrix screen place your cursor on the edge of the screen in a corner, click and drag to size. To move the sized screen, click on the title bar of the screen and drag it to the desired location.

When you are ready to choose another patient in Dentrix, do so in the usual manner without closing the DEXray or DEXimage screen. Once the newly selected patient's Dentrix screen opens, the DEXray or DEXimage screen will automatically switch to that patient. Since DEXIS remembers screen size changes, the screen will be the size it was for the previous patient.

Should you inadvertently close DEXray or DEXimage entirely, simply reopen it as previously described.

Viewing multiple screens

To view one DEXray screen and one DEXimage screen, click on the DEXray icon on the quick launch bar. Then click on the DEXimage icon on the quick launch bar. Both screens will now be visible and are available to size, maximize for use, minimize and to reposition anywhere on the screen or Dentrix screen.

To view both the intra-oral and extra-oral DEXray screens at once, with one screen open, click again on the DEXIS icon on the quick launch bar. Two X-ray screens will now be visible. Change one to intra-oral or extra-oral as applicable. Both screens are available to size, maximize for use, minimize and to reposition anywhere on the screen or Dentrix screen.

To view intra-oral and extra-oral DEXimage images at the same time, with one screen open, click again on the DEXimage icon on the quick launch bar. Two DEXimage screens will now be visible. Change one to intra-oral or extra-oral as applicable. Both screens are available to size, maximize for use, minimize and to reposition anywhere on the screen or Dentrix screen.

To view both the DEXray intra-oral and extra-oral screens and the DEXimage intra-oral and extra-oral screens at once, open both DEXIS screens as previously described. Without closing these screens, open both DEXimage screens as previously described.

When viewing multiple DEXray/DEXimage screens open, close all but one screen BEFORE changing to a different patient. Should you neglect to do this, it may be necessary to close DEXIS in order to re-establish the link as previously described.

See “Screen and Window Adjustments” on page 125 for additional instructions on viewing multiple screens.

D.3 DEXIS TO EAGLESOFT LINK

Installation of the DEXIS-to-EagleSoft link should not be attempted without assistance from Technical Support.

All patients are entered and chosen through the EagleSoft software. If you enter patients directly in DEXIS Administration you need to assign the EagleSoft chart numbers.

Enter the EagleSoft ChairSide program and select a patient. Please verify that you have indeed selected a patient before moving to the next step.

Click the picture of the X-ray head on the front screen to open the DEXray screen for your selected patient. You may also access the DEXray screen from the EagleSoft Chart screen by selecting “X-ray” from the drop-down menu at the bottom of the screen.

Please note: If you are not properly linked, you will receive a warning message. Please close DEXIS, open Eaglesoft, and begin again.

Once the DEXray screen opens, you may size, maximize for use, minimize and reposition the DEXray screen as with any screen in Windows.

To size and position the DEXray screen anywhere on the EagleSoft Chairside screen, place your cursor on the edge of the screen in a corner and click and drag to resize; to move the resized screen, place your cursor on the title bar of the screen and drag it to the desired location.

Maximize to switch between the intra-oral and extra-oral DEXray screens, to use any of the DEXray icons, or to switch to the DEXimage screen.

You may resize the DEXray screen and the EagleSoft Chart to suit your needs.

When you are ready to choose another patient in Eaglesoft, close the DEXray or DEXimage screen for the current patient.

Select a new patient and re-link to DEXIS as previously described.

APPENDIX E

Backing Up Your Image Files



The DEXsafe program allows for the backup and restoration of all DEXIS data.

To use this feature you must have a specific backup area or device denoted with a drive letter.

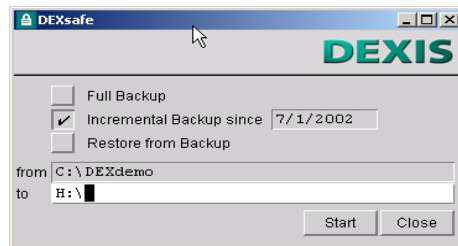
Once you choose and install a specific backup device, locate the drive letter: From your desktop, double-click on My Computer. The device and its drive letter will be listed.

From the DEXIS Administration screen, click on the DEXsafe icon to open the DEXsafe screen.

Choose Full Backup to backup all data since the first use of DEXIS. Choose Incremental Backup since (add date) to backup data since a certain date. DEXsafe will show the location of the DEXIS data in the “from” field; enter the drive letter of your backup device in the “to” area.

Click Start to start and Close to exit.

If you need to restore your data, Technical Support will assist you in using the Restore from Backup feature.



APPENDIX F

Frequently Asked Questions

1) Question: Why do I get the message, “Patient Data-File Not Found.”

Answer: Usually this message means that you have lost access to either your local drive or to your network. The patient’s data is stored in the dexis\data directory (folder) either in the local c:drive or on your network drive.

2) Question: How do I delete a patient?

Answer: First, you must delete all images in the patient’s file. Then, go to the DEXIS Administration Screen, choose the patient and click on Delete.

3) Question: I took X-rays in the wrong patient’s file. How do I move them into the correct patient’s file?

Answer: First, export the images from the wrong patient to the hard disk. DEXIS will copy and place them into a holding folder. Once the images are exported, open the correct patient’s file. Import the images from the hard disk. Lastly, delete the images from the incorrect file.

4) Question: Why does my image look fuzzy on the screen?

Answer: Verify that you are using the proper sensor number when taking images. Verify that you have the proper exposure setting and that the cone is touching the face.

5) Question: Why does my image look better on the screen than when printed?

Answer: This is often the case even using advanced printers. Print the image using a higher dpi on your printer. Try using different types and quality levels of paper.

6) Question: How do I change a patient’s information?

Answer: From DEXIS Administration, choose Modify for the selected patient. Make the changes and click Done to save.

7) Question: How do I change the practice name once I am using DEXIS?

Answer: From the DEXIS Administration screen, click on Tools and Preferences and then Component Licensing. Once on this screen, call DEXIS Technical Support to assist you in making this change and obtaining new registration codes.

8) Question: What if I have more than one sensor?

Answer: see “Installing the Sensor Disk” on page 15.

9) Question: What if I lose the diskette that came with my sensor?

Answer: Contact DEXIS Technical Support to arrange to have this disk recreated. We can mail a new disk and/or send the sensor drivers via e-mail.

10) Question: Can I print images in ClearVu format?

Answer: Yes. You can print individual X-rays or a full mouth series in ClearVu by choosing the Print Clear-Vu in the DEXIS Print Menu.

11) Question: How can I determine if I am using the correct exposure?

Answer: “Adjusting the X-ray Source” on page 17.

12) Question: Can DEXIS images be copied and then pasted into other programs?

Answer: Yes, you can use the Windows clipboard with DEXIS. Enlarge the desired image. While holding down the Control key on your keyboard, hit the C key. This will copy the image to the Windows clipboard. Switch to the program where you want to paste the image and then hit the Control key and the V key. This will paste the image.

13) Question: When I opened a patient’s file, some of the images were not visible. Are they lost?

Answer: DEXIS allows you to select certain images and the view you in which would like them to be displayed. Click on the Archive icon to see a full history of images for the patient.

APPENDIX G

Additional Help and Support

DEXIS Technical Support

1-888-88DEXIS (1-888-88-33947) option 3

Available Monday thru Thursday 8:00 AM – 8:00 PM EST

Friday 8:00 AM - 6:00 PM EST

DEXIS on the Internet

<http://www.DEXray.com>

DEXIS 5.0 System Requirements

It is highly suggested that you or your network/computer consultant contact **DEXIS** Technical Support at **1-888-883-3947** for a review of your current system. Or if purchasing a new computer call to discuss possible issues with the Brand/Model you are considering using with the DEXIS system.

Item:	New Systems	Current Systems	Notes:
CPU	Intel or AMD 1.5 GHz or higher	Intel PII or higher (No AMD K6)	AMD's K6 & below are not compatible or supported.
Motherboard	Intel & VIA PCI Bus chipsets only	Intel & VIA PCI Bus chipsets only	DEXIS supports Intel & newer VIA chipsets . Clone products may cause hardware compatibility issues. Older SiS chipset/AMD processor combo motherboards <u>WILL</u> create compatibility issues. Furthermore <u>ALL-IN-ONE</u> motherboards may have compatibility issues or conflicts. Must have full height PCI slots in computer cases. No SLIM LINE CASES. Call DEXIS Technical Support for more information.
Operating Systems	Workstation: Windows 2000/XP Pro Server: Windows 2000 Server	Windows 98SE/2000/XP Pro/Home	Servers running Windows XP are not supported.
System Memory	Workstations: 256 MB or higher* Servers: 512 MB or higher	Workstations: 64 MB or higher* Servers: 128 MB or higher	* Memory has a major impact on your system performance. Using 256 Megs or more of RAM in each machine will noticeably improve system performance. Servers should have a minimum of 512 MB's or RAM. If you add additional workstations, plan on upgrading your Server RAM as well.
Hard Drive	Workstation: 20Gb or larger Server: 80Gb or larger	Workstation: 10Gb IDE or larger Server: 40 Gigabyte or larger	Do not run any type of Hard disk compression utilities when you start running out of space. You will have an easier time & fewer complications upgrading the Hard Disk.
Display Adapter	XVGA 16 MB Display adapter.* Capable of 1024x768 & 32 bit Color	SVGA 4 MB Display adapter. Capable of 800x600 & 24 bit color.	*Must be compatible with your Capture card if you are planning on using Video Capture.
Monitor	Brand name 17" or larger, capable of a minimum resolution of 1024x768 & minimum .25 Dot Pitch or hi-resolution LCD Display* capable of 1024x768. (Must be able to display all shades of gray accurately)	15" or larger, capable of 800x600 with a minimum of .25 Dot Pitch.	Remember , your display plays a vital part in the viewing of your images. A screen with poor quality will prevent you from proper diagnoses & treatment. Not all LCD displays are suitable to Digital X-ray. Call DEXIS Technical Support for more info.
PC card readers	Élan P423/424 PCI (Internal/External)	Élan P423/424 PCI (Internal/External)	The type of reader you need is dependent on your hardware configuration. Call before ordering your readers. NOTE DEXIS only supports the readers listed; all other reader products are NOT supported by Dexis Technical Support. (Call for details)
Network Cards	3Com/Linksys PCI 10/100baseT NIC PCMCIA versions available for Laptops	3Com/Linksys PCI 10baseT NIC PCMCIA versions available for Laptops	
Scanners	Epson Expression 1680 Pro. (8.5"x11.7" TA) Epson Perfection 2450 PHOTO (4"x9" TA)	Call DEXIS Technical Support to see if your current model will work correctly.	Full size transparency adapters may be sold separately. Verify you can get the transparency adapter before purchasing the scanner. They can usually be purchased together.
Printers	Epson or HP Photo Quality Ink Jet printers	HP or Epson Inkjet printers.	Call for a recommendation.
Video Capture	ATI Radeon All-in-wonder 7500 / Matrox Marvel G450 eTV Hauppauge USB Live	Call DEXIS Technical Support to see if you current model will work correctly.	
CD/DVD/ Floppy	32x IDE CD-ROM/4x DVD drive/ 3.5" Floppy	4x generic IDE CD-ROM/3.5" Floppy	Needed on all computers for DEXIS software installation
Backup Media	Removable/Portable external Hard Disk		A good backup is a vital asset. We strongly recommended that you have a backup media disk labeled for every day of the week & an additional backup for end of every month.
SCSI Cards	Desktop: Adaptec PCI SCSI cards Laptop: Adaptec SlimSCSI 1460	Desktop: Adaptec PCI SCSI cards Laptop: Adaptec SlimSCSI 1460	A PCI SCSI card will usually come bundled with the scanner. The SlimSCSI can be acquired separately for the use of SCSI scanners or other SCSI devices on your laptop.
Digital Cameras	Any brand camera capable of 640x480 24 bit color TIF images.		Flash card or Smart Card storage needed
Intra Oral Cameras	Intra-oral camera with a Composite or S-video output.	Intra-oral camera with a Composite or S-video output.	If your camera sends live video from either of these two ports, your camera may work. Call to see if your camera is compatible.
X-Ray Head	X-ray heads should be able to support 60-70KVP, 8MA & be able to adjust the timer settings from 0.10-0.18 seconds. X-ray heads must be capable of 70kv and have automatic line regulation. NO adjustable knobs to adjust line voltage.		Note: Not all X-ray heads are suitable for Digital X-ray. Please call DEXIS Tech Support for additional information.

DEXnet

Installing Dexis on a Network

Release 3.00, January 2000

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1 Introduction

This paper describes the steps necessary when installing Dexis on an existing computer network with several workstations running Windows95, Windows98, or WindowsNT. The network hardware (cables, network cards) and the protocols used are not part of this paper. You should contact a local computer professional to set up your network. The Dexis program only uses features provided by all networks: mapping server disks or folders to local drive letters, and synchronizing file access.

Note: You need a valid DEXnet site license to run Dexis software on a network.

If you just want to connect two computers together (e.g. two laptop computers or your new Dexis laptop with an existing desktop computer), two inexpensive and easy ways are possible:

- ‘Direct cable connection’ via the printer ports is the cheapest way to connect two computers. Since this may well be used for initially connecting a laptop to either another laptop or to one computer in your existing network, the setup of this type of network (YES, if you connect two computers you already have a network!) is described in this paper

(see 'Direct Cable Connection'). Everything that is said about installing Dexis on a network also holds for this simple network.

- If you run Windows98 and both computers have USB ports, you may use a USB based peer-to-peer network.

2 Planning the Installation

Two things are necessary to know before you start installing Dexis:

a) Are all computers permanently connected to the network when they are used to take x-rays; or do you take x-rays with a laptop offline?

If all your computers are permanently hooked up to the network, a standard network installation with the data directory on the server is the installation of choice. This installation has the advantage that all images are always immediately on the file server and thus accessible from all connected computers (see 'Standard Network Installation').

If you plan to use your laptop to take x-rays while it is not connected to the network, you need to install Dexis on your laptop with the data directory on the local drive. For synchronizing the laptop databases with the file server you need DEXsync (see 'Offline Installation'). This is the only case when you have to install DEXsync.

b) Is it intended to link Dexis to practice management software? In this case you have to prevent Dexis from issuing patient numbers and use the numbers issued by the practice management software instead (see 'Practice Management Connection'). In the case of two separate image databases being synchronized using DEXsync ('Offline Installation') you also have to use manual patient numbers.

3 Software

Two programs are relevant for Dexis network installation. They are both located on the Dexis CD-ROM:

DEXsync	serves to synchronize image databases and is to be installed if needed. Note: this program is only needed if you plan to use Your laptop for taking x-rays while being disconnected from the network.
DEXcopy	may be used to copy and reorganize image databases. Since release 3.00, this program is automatically copied to your harddrive when Dexis is installed. It

can be started from Windows Explorer by double clicking on its icon. With previous versions of Dexis, DEXcopy comes on the DEXnet diskette and can be run from the diskette by choosing 'Start' then 'Run' and typing A:\DEXCOPY.

Note: The use of DEXcopy is password protected, since it can be used to destroy the integrity of your image database. Call Dexis technical support for the maintenance password. Always make a backup copy before copying or restructuring image databases.

4 Standard Network Installation

4.1 New Installation

If Dexis has not yet been installed on your network, proceed as follows:

- Select the computer and its harddrive to hold the Dexis images (the 'server'). Share this harddrive to be accessible from all workstations. you need full access and should not enter a password.
- Install the Dexis software on the server. If your server uses a different operating system (e.g. Unix or Novell), create the directory \Dexis\Data manually on the server drive.
- Map the server drive on all workstations where you want to see the Dexis images or where you want to take X-rays. Use the same drive letter on all workstations, we propose 'X' (for X-ray).
- Install the Dexis software on all workstations choosing C:\Dexis for the software, and \Dexis\Data on the server drive (e.g. X:\Dexis\Data) for the data directory. **Note:** The software should always be installed on all workstations on the local drives – you should not share the software over the network.

4.2 Adding a Workstation

To add a workstation, you just have to connect it to the network, map the server drive containing the Dexis images, and install the Dexis software on

the local drive, assigning the server drive and directory (e.g. X:\Dexis\Data) to be used as data directory.

4.3 Switching from a Local Installation to a Network Installation

Laptops delivered by us come with a local Dexis installation, which issues its own patient numbers. This section describes how you modify this installation for use in a network. The local installation may already contain data.

- Make sure, Dexis is installed on your server that is to hold the Dexis images. and that the server drive is shared, i.e. accessible from other workstations. If the server runs a different operating system (e.g. Unix, Novell), create the directory \Dexis\Data on the server drive.
- On your workstation holding the Dexis data to be moved to the server install the network and map the network drive to a drive letter
- Run DEXcopy on the Workstation to be connected. This program will propose C:\Dexis\Data as source directory, and ask you for a destination data directory. Type in the full drive and path (e.g. X:\DEXIS\DATA) of the new data directory on the server. If you want to switch to patient numbers from a practice management system, check the box 'Always ask for new patient numbers'. Then click 'Start transfer'. The program will transfer all existing patients and images to the server drive.
If you selected to change the patient numbers, it will ask you for a new number for each patient; otherwise it will only ask you if a patient with the same number but different name is already present on the network drive.
After finishing the transfer, DEXcopy will ask you whether to adapt the program settings. If you answer 'Yes', the program will do all necessary steps and you are connected. If you chose to change the patient numbers, DEXcopy will also change the settings so that in the future the Dexis program will not issue its own numbers. You are now ready to connect to your practice management software.
- Repeat the copying process using DEXcopy on all connected workstations that have their own image databases. DEXcopy can merge several Dexis image databases.
- When all data is transferred and everything runs fine, you may delete the directory C:\DEXIS\DATA and all its contents on the workstation that is now connected and accesses the data on the server.

Note: We propose to use DEXcopy for transferring your data, because DEXcopy can also merge image databases and can renumber patients. If you are sure that the destination directory does not contain any useful data, you can also copy the data directory using Windows or DOS methods.

5 Offline Installation

When explaining this installation, we will refer to one of the computers as the 'laptop', to the other one as the 'server'. Note that the server may also be a second laptop.

This type of installation means that you keep the local installation on your laptop and synchronize from time to time (when you are connected) with the server. If you install your Dexis software this way, you have the advantage of being able to carry your laptop freely around and taking X-rays with it or with your server. The disadvantage is that an additional step is necessary to be able to view all X-rays on all workstations.

- Backup all your data.
- Install Dexis on the server and on the laptop computer, if not already installed. In both cases give it data directory on a local drive (e.g. C:\Dexis\Data).
- On both local installations on your laptop and on your server you will have to change the setting to manual patient numbers. Otherwise the system will issue the same numbers for different patients on different computers (see 'Practice Management Connection'). You will also have to renumber existing patients to reflect the chart numbers from your practice management software.
- Connect the laptop to the network and map the network drive.
- Install DEXsync from the Dexis CD-ROM on the laptop. Give it C:\Dexis as installation directory.
- Copy the 'DEXsync' shortcut to your desktop.
- If both image databases, the one on the laptop and the one on the server, contain different data, you have to merge the two databases using DEXcopy. Start DEXcopy on your laptop, and give it the local data directory as source, and the remote server directory as destination. Then

delete the contents of the C:\Dexis\Data directory on your laptop. Leave the directory itself intact.

- Start DEXsync; give it the local data directory (C:\Dexis\Data) as source and the remote data directory (e.g. X:\Dexis\Data) as destination. Since DEXsync synchronizes, i.e. copies in both directions, this will result in two equal image databases on your laptop and on your server.

You may now take x-rays offline. Make sure that you give your patients unique numbers; probably those issued by your practice management software.

Once a day or after each treatment, you may connect the laptop to the network and launch DEXsync by double clicking on its icon. This will synchronize the two databases so that all images are available on both computers. DEXsync will not ask you again for directories, but will use the same directories you gave it the first time.

If you have two offline laptops (A and B), which you use to take X-rays, but you do not take X-rays with the server, you should first synchronize laptop A with laptop B, then synchronize one of them with the server. If you use all three for taking X-rays, you have to synchronize A with the server, then B with the server, then A again (to get the images taken with laptop B).

6 Wireless Installation

For wireless networks you have two choices:

- If the connection is reliable and the network is fast enough, you use the standard network installation.
- If you have problems with the connectivity, you use the installation described under 'Offline Installation', thus storing the images on the local disks of the computers, and synchronize from time to time using DEXsync.

7 Practice Management Connection

To prepare Dexis for a connection to any practice management software you have to set it up so it does not issue its own patient numbers. This is done by the SETUP if you answer 'Yes' to the corresponding question. You can also switch to manual numbers later on, by changing the setting in the Preferences dialog of the patient administration.

If you have already entered patients and have to renumber them, you can do that in the Dexis patient administration by selecting each patient, clicking on Modify, and then changing the number. If you have plenty of patients to renumber, you can do that with the help of the DEXcopy program. Proceed as follows:

- Run the DEXcopy program. This program will ask you for source and destination data directories. The source directory is preset to the Dexis data directory. Leave that setting and leave the destination empty. Check the box 'Always ask for new patient numbers'. Then click 'Start transfer'. The program will go through all existing patients, and will ask you for new numbers. After the transfer is finished, all patients will have new numbers. The original image database is saved in a location, which DEXcopy will tell you. DEXcopy will also change the settings of the Dexis program so that it does not issue its own numbers anymore. You are therefore prepared to connect to your practice management software.
- When all data is transferred and everything is tested and runs fine, you may delete the old image database.

8 Direct Cable Connection

The cheapest way to connect two Windows95/98 computers to form a network is by connecting their printer ports with a so-called **LapLink** cable. This cable is the only hardware you need. The necessary software is part of Windows95 and makes a real network out of this handy and cheap piece of hardware (just bought one at \$9.99). But it has to be installed and configured. This has to be done on both participating computers.

8.1 Installation of Direct Cable Connection

Some laptops have 'direct cable connection' already installed when delivered. Check that, and install if necessary as follows:

1. Open up the Windows control panel and double-click on the Add/Remove Programs icon.
2. Select the Windows Setup tab. A list of installable and installed Windows95 components appears.
3. Select the Communications component and click on Details.
4. If Direct Cable Connection has a check mark next to it, it is already installed. You may then click OK. Otherwise click on the box next to it to

check it. Then click OK. If necessary, the system prompts you for the Windows95 CD-ROM.

5. After installation you have to restart the computer.

This is to be done on both participating computers.

8.2 Network Setup

One of the connected computers plays the role of a **host**, while the other plays the role of a **guest**. The guest computer accesses shared resources (files) of the host computer and eventually of other computers connected to the host via network. This is exactly as other network nodes access shared resources on other computers. The host computer has to be set up in a way so that the guest computer is allowed to access its files. The following points thus apply only to the host computer:

1. Open up the Windows control panel and double-click on the Network icon.
 2. Select the Identification tab and give your computer a meaningful name.
 3. Select the Configuration tab and click on File and Print Sharing
 4. In the File and Print Sharing dialog check 'I want to be able to give others access to my files', then click OK.
 5. In the Network dialog click OK.
 6. The system will ask you to restart your computer. Do that.
- As noted above, this is to be done only on the host computer.

8.3 Sharing the Harddisk

In order that the guest computer has access to the files on the harddisk (usually named C:) of the host computer, the host has to 'share' the harddisk:

1. Open up My Computer and right-click on the drive you wish to share (usually C:).
2. Click on Sharing...
3. Select the Sharing tab and there select Shared As
4. Enter a name, under which this drive is to be known by the guest computer; it is good practice to just use the drive letter as the name (e.g. C).
5. Under Access Type, click on Full, then click OK

These steps are to be done only on the host computer.

8.4 Configuring Direct Cable Connection

In order to configure Direct Cable Connection on both computers; first connect the printer ports of the two computers with the LapLink cable. Then start Direct Cable Connection on both computers: click on Start, then Programs, and select Direct Cable Connection from the Accessories submenu. When you start the Direct Cable Connection for the first time, a wizard will help you in configuring it.

You now have to know which computer is to be the host (the one that presents its files), and which one is the guest (the one accessing the files on the host computer). The host computer has to have a meaningful name, and its harddisk has to be shared as described above.

1. The configuration wizard will first ask you, whether the computer you are using is to be the host or the guest. Answer accordingly.
2. The next question will be which connection you are to use. Select 'Parallel cable on LPT1' and click Next.
3. You probably do not want to use a password, so just click Finish.

These steps have to be done on both computers.

You might want to create a shortcut on your desktops for the Direct Cable Connection. Do this on both your computers by right clicking on the desktop and selecting New, then Shortcut. As command line enter on the host computer:

```
C:\WINDOWS\DIRECTCC.EXE GO
```

and on the guest computer:

```
C:\WINDOWS\DIRECTCC.EXE
```

This way you can later on start Direct Cable Connection on both your computers by double clicking on the icon.

8.5 Mapping the Network Drive

On the guest computer you now have to map the shared harddisk of the host computer to a drive letter. To accomplish this, do the following:

1. Right-click on Network Neighborhood and select Map Network Drive.

2. Select a Drive which is not yet in use and which you can remember easily, then - under Path - type in two backslashes, followed by the name you gave your host computer, followed by one backslash, followed by the share-name you gave to the harddisk of the host computer. As an example, if the host computer is called 'HOST', and the harddisk has been shared as 'C', you have to enter the following path: \\HOST\C. If the computers are already connected, this entry can also be selected by clicking on the down-arrow right to the field.
3. Check 'Reconnect at logon' if you want to map the drive automatically every time you start your computer (recommended).

The steps above have to be done only on the guest computer.

8.6 Using Direct Cable Connection

After Direct Cable Connection has been configured, the next time you start it, it uses the saved configuration unless you indicate otherwise. The GO parameter added to the command line on the host computer makes that the program immediately starts listening to a connection. If you want to reconfigure the program, you have to start it without the GO parameter.

When the computers are connected and Direct Cable Connection is started on both of them, you see the harddisk of the host computer on your guest computer as a network drive.

If you want to use Dexis Exchange to synchronize image databases on the 2 computers connected, install Dexis Exchange on the guest computer and specify \DEXIS\DATA on the mapped drive as the destination directory (e.g. F:\DEXIS\DATA, if you mapped the host computers harddisk to drive letter F:).

DEXIS®

DICOM Conformance Statement
2.0

The software described in this document has been validated in accordance with the governing DICOM standard at the time of this document's release. Provision Dental Systems shall not be liable for errors contained herein or consequential damages in connection with the furnishing, performance, or use of this document.

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1 INTRODUCTION

This chapter provides general information about the purpose, scope and contents of this Conformance Statement.

1.1 SCOPE AND FIELD OF APPLICATION

The scope of this DICOM Conformance Statement is to facilitate data exchange with the DEXIS® X-ray system and the DEXIS Software suite. This document specifies the compliance to the DICOM standard. It contains a short description of the applications involved and provides technical information about the data exchange capabilities of the equipment. The main elements describing these capabilities are: the supported DICOM Service Object Pair (SOP) Classes, Roles, Information Object Definitions (IOD) and Transfer Syntaxes.

The field of application is the integration of the DEXIS equipment into an environment of other medical devices and practice management software. This Conformance Statement should be read in conjunction with the DICOM standard and its addenda.

1.2 INTENDED AUDIENCE

This Conformance Statement is intended for:

- system integrators of medical equipment,
- software designers implementing DICOM interfaces.

It is assumed that the reader is familiar with the DICOM standard.

Readers wishing to obtain more familiarity with the content and terminology of DICOM 3.0 Standard are encouraged to obtain and review the standard prior to reading this Conformance Statement. More information on acquiring this document and its updates on the DICOM standard may be found on the website of the National Electrical Manufacturer's Association (NEMA) at <http://www.nema.com>.

1.3 CONTENTS AND STRUCTURE

The DICOM Conformance Statement is contained in chapters 2 through 7 and follows the contents and structuring requirements of DICOM PS 3.2-2000.

1.4 REVISION HISTORY

<i>Revision</i>	<i>Date</i>	<i>Description</i>	<i>Person</i>
1.0	5 Nov. 2000	Initial Draft	M. Pfeiffer
2.0	1 Nov. 2002	Adaptation to CD-R Image Interchange Profile	H. Feuerhahn

1.5 DEFINITIONS, TERMS AND ABBREVIATIONS USED

AE	DICOM Application Entity
CR	Computed Radiography
DICOM	Digital Imaging and Communications in Medicine
FSC	File Set Creator
FSR	File Set Reader
FSU	File Set Updater
IOD	DICOM Information Object Definition
RWA	Real-World Activity
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
Tag	A 32 bit integer consisting of a group/element pair
UID	Unique Identifier
VM	Value Multiplicity
VR	Value Representation

1.6 REFERENCES

DICOM standard:

PS 3.2-2000	Conformance
PS 3.3-2000	Information Object Definitions
PS 3.4-2000	Service Class Specifications
PS 3.5-2000	Data Structures and Encoding
PS 3.6-2000	Data Dictionary
PS 3.10-2000	Media Storage and File Format for Media Interchange
PS 3.11-2000	Media Storage Application Profiles
PS 3.12-2000	Media Formats

1.7 TRADEMARKS

DEXIS is a registered trademark in the USA, UK, France, Germany, Belgium, Switzerland, Netherlands, Luxembourg, Sweden, Spain, Italy.

1.8 CONNECTIVITY AND INTEROPERABILITY

This Conformance Statement by itself does not guarantee successful interoperability of DEXIS equipment with non-DEXIS equipment or non-DEXIS software. The user (or the user's agent) should be aware of the following issues: The implementation of the DEXIS DICOM interface has been carefully tested to assure correspondence with this Conformance Statement. But the Conformance Statement by itself and the DICOM standard does not guarantee interoperability of DEXIS modalities and modalities of other vendors. The user (or the user's agent) must compare the relevant Conformance Statements and if a successful interconnection should be possible, the user is responsible to specify an appropriate test suite and to validate the interoperability, which is required. A network environment may need additional functions out of the scope of DICOM.

2 IMPLEMENTATION MODEL

The DEXIS SOFTWARE Release 5 is a comprehensive range of software modules that allow for tailored solutions in the dental imaging field. The software applications are categorized in packages, for instance the DEXwrite package for referral letters. The Application Entity responsible for exchanging data is the "DEXIS Import/Export Application Entity", which is integrated into the DEXray

and DEXimage packages.

The DEXIS SOFTWARE provides the following DICOM data exchange features:

- DEXIS can export DICOM File Sets to removable media; it thus serves as DICOM File Set Creator (FSC). If the images are not internally stored in DICOM file format, they are converted when exported.
- DEXIS can browse through DICOM File Sets on removable media and can import images from these File Sets; it thus serves as DICOM File Set Reader (FSR).

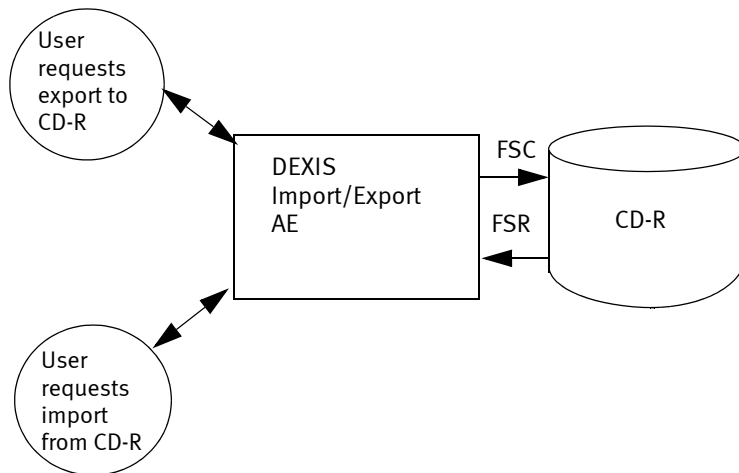
2.1 APPLICATION DATA FLOW DIAGRAM

The DICOM import and export functionalities for the CD-R device are handled by the DEXIS Import/Export Application Entity (AE). The DEXIS Import/Export Application Entity is commanded by the user to perform DICOM services operating on the DICOM media through the use of buttons and menu selections on the graphical user interface of the station.

The user requests the creation of a DICOM file set by selecting the images in the list displayed by the export function and by selecting DICOM as the file format. By selecting a drive and optional folder the file set can either be created directly on a removable media (CD-R) or in some temporary folder on the hard disk and written to CD-R by selecting images in the local Browser, and by a drag and drop of those images on the CD-R icon.

The user can request the reading of a DICOM file set written on a CD-R by selecting the CD-R drive in the browser of the import function, and browsing the archive using the displayed folders and files. He can then import the selected items by double-clicking on them or by selecting them and clicking the “Import” button.

For the purpose of this Conformance Statement import and export is restricted to CD-R media, but the same methods can be applied to other removable media.



2.2 FUNCTIONAL DEFINITION OF APPLICATION ENTITIES

The DEXIS Import/Export Application Entity supports the following functions:

- Can write a DICOM File Set (FSC) on a CD-R.
- Can read a DICOM File Set (FSR) on a CD-R.

2.3 SEQUENCING REQUIREMENTS

Non applicable.

2.4 GENERAL META INFORMATION OPTIONS (SEE PS 3.10)

Implementation Class UID (0002,0012)='1.2.840.114059.1.1.6.1.50.1'.

Implementation Version Name (0002,0013)='DEXIS20021101'.

3 APPLICATION ENTITY SPECIFICATIONS

3.1 DEXIS IMPORT/EXPORT AE SPECIFICATION

The DEXIS Import/Export Application Entity provides conformance to the Media Storage Service Class according to the following table

3.1.1 FILE META INFORMATION FOR THE DEXIS IMPORT/EXPORT AE

<i>Supported Application Profiles</i>	<i>Real World Activity</i>	<i>Role</i>	<i>Service Class Option</i>
<i>STD-GEN-CD</i>	<i>Export to CD-R</i>	<i>FSC</i>	<i>Interchange</i>
<i>STD-GEN-CD</i>	<i>Import from CD</i>	<i>FSR</i>	<i>Interchange</i>

3.1.2 REAL-WORLD ACTIVITIES FOR THIS APPLICATION ENTITY

3.1.2.1 REAL-WORLD ACTIVITY: EXPORT TO CD-R

The DEXIS Software acts as an FSC using the interchange option when requested to copy SOP Instances from the local data base to the CD-R.

3.1.2.1.1 DICOM DIRECTORY

The DEXIS Software writes directory records Patient, Study, Series and Image. Images are referenced via the Image Directory Entry attribute Referenced File ID (0004,1500). DEXIS does not employ Multi-Referenced Directory Entries.

3.1.2.1.2 SOP SPECIFIC CONFORMANCE

The file sets created by the DEXIS Software can contain information objects of the following SOP Classes:

<i>Information Object Definition</i>	<i>SOP Class UID</i>	<i>Transfer Syntax and UID</i>
<i>Media Storage Directory Storage</i>	<i>1.2.840.10008.1.3.10</i>	<i>Explicit VR Little Endian 1.2.840.10008.1.2.1</i>
<i>Digital X-ray Image Storage - For Pres- entation</i>	<i>1.2.840.10008.5.1.4.1.1.1.1</i>	<i>Explicit VR Little Endian 1.2.840.10008.1.2.1</i>
<i>Digital Intra-oral X- ray Image Storage - For Presentation</i>	<i>1.2.840.10008.5.1.4.1.1.1.3</i>	<i>Explicit VR Little Endian 1.2.840.10008.1.2.1</i>
<i>VL Photographic Image Storage</i>	<i>1.2.840.10008.5.1.4.1.1.77.1.4</i>	<i>Explicit VR Little Endian 1.2.840.10008.1.2.1</i>

3.1.2.2 REAL-WORLD ACTIVITY: IMPORT FROM CD-R

The DEXIS Software acts as an FSR using the interchange option when requested to copy SOP Instances from the CD-R to the local data base.

3.1.2.2.1 DICOM DIRECTORY

The Import function of the DEXIS Software serves to import image file in all formats known to the software. If inside this function a location is selected that contains a valid DICOM data set, the DCOMDIR file is listed. When the user clicks on the DCOMDIR entry, all image files and descriptive information (patient name, image date, anatomic region) are listed, and the user can select the image files to import. If the patient names do not match, the user is asked for confirmation.

There are no requirements or restrictions on the contents of the DCOMDIR. If the DCOMDIR is missing, the media can be browsed and the individual image files can be imported anyhow.

3.1.2.2.2 SOP SPECIFIC CONFORMANCE

The Import function of the DEXIS Software accepts information objects of the following SOP Classes:

<i>Information Object Definition</i>	<i>SOP Class UID</i>	<i>Transfer Syntax and UID</i>
<i>Digital X-ray Image Storage - For Presentation</i>	<i>1.2.840.10008.5.1.4.1.1.1.1</i>	<i>Explicit VR Little Endian 1.2.840.10008.1.2.1</i>
<i>Digital Intra-oral X-ray Image Storage - For Presentation</i>	<i>1.2.840.10008.5.1.4.1.1.1.3</i>	<i>Explicit VR Little Endian 1.2.840.10008.1.2.1</i>
<i>VL Photographic Image Storage</i>	<i>1.2.840.10008.5.1.4.1.1.77.1.4</i>	<i>Explicit VR Little Endian 1.2.840.10008.1.2.1</i>

4 AUGMENTED AND PRIVATE APPLICATION PROFILES

No augmented Application Profiles are supported.

5 EXTENSIONS/SPECIALIZATIONS/PRIVATIZATIONS

The following restriction applies to SOP instances of the VL Photographic Image Storage Class:

The tag “Photometric Interpretation” (0028,0004) shall have one of the values: RGB or MONOCHROME2.

There is no restriction on SOP instances of the Digital X-ray Image Storage Class and on the SOP instances of the Digital Intra-oral X-ray Image Storage Class.

The Application Entity uses private tags according to the following description:

<i>Name of Private Tag</i>	<i>Tag</i>	<i>Description</i>
<i>Private Tag Range</i>	<i>(0029,0029)</i>	<i>Reserves the (0029,29xx) Range</i>

<i>Description</i>	<i>(0029,2920)</i>	<i>Environmental Description</i>
<i>Orientation</i>	<i>(0029,2921)</i>	<i>Computed Type and Orientation</i>
<i>Parameter 1</i>	<i>(0029,2922)</i>	<i>Various Parameters</i>
<i>Parameter 2</i>	<i>(0029,2923)</i>	<i>More Parameters</i>
<i>Teeth</i>	<i>(0029,2924)</i>	<i>ISO Tooth Descr.</i>
<i>Jaw</i>	<i>(0029,2925)</i>	<i>ISO Jaw Descr.</i>
<i>Quadrant</i>	<i>(0029,2926)</i>	<i>ISO Quadrant Descr.</i>
<i>CRC</i>	<i>(0029,2927)</i>	<i>CRC Check Sum</i>

6 CONFIGURATION

The DEXIS Software can be set to store all images internally in DICOM image file format; if this setting is on, and all images are stored in DICOM file format, no conversion is done when importing or exporting images in DICOM format. Images not stored internally in DICOM format are converted when exported; these images also contain all the necessary information.

7 SUPPORT OF EXTENDED CHARACTER SETS

The DEXIS Software will only create SOP instances containing the DICOM default character set as defined in PS 3.5.

8 CODES AND CONTROLLED TERMINOLOGY

The SOP Classes supported by this implementation require the Codes and Controlled Terminology for the Anatomy Imaged according to PS 3.3 C.8.11.2 which are fully supported.